Miners' Circular 26

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, SECRETARY

BUREAU OF MINES

VAN. H. MANNING, DIRECTOR

MINERS' SAFETY AND HEALTH ALMANAC FOR 1920

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COMPILED BY

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MINERS' SAFETY AND HEALTH ALMANAC FOR 1920.

Compiled by R. C. Williams.

INTRODUCTION.

This Miner's Safety and Health Almanac, for the calendar year 1920, is the second of a series published by the Bureau of Mines, the first, for the year 1919, having been issued as Miners' Circular 24.

Besides being useful as a calendar, this almanac contains information on different diseases that cause much sickness and death among miners and their families, and points out how such diseases can be kept from starting and spreading. Also, it describes some of the more common causes of accidents in mines and shows how the miner can lessen the risks of his work.

Every miner owes it to himself and his family to keep healthy. Sickness means loss of time and money, and often it means death, permanent incapacity, or reduced efficiency. By carefully observing the health hints set forth in the following pages, the miner can do much toward protecting himself and family against the diseases mentioned.

Accidents in mines are not always avoidable, but by care and watchfulness many of the accidents that daily happen in mines could be prevented. By studying the safety precautions in this booklet the miner will learn how to make his work safer and how to better guard himself and his fellow miners against accident or disaster.

FIGURE 1.—"Emblem" of the "battalions" of the Bureau of Mines.

INFLUENZA AND PNEUMONIA.

Among the diseases to be avoided by miners and their families are influenza and pneumonia. These diseases are in a large measure preventable if the proper precautions are followed.

In guarding against disease of any kind it is important that the body be kept strong and thus able to fight off disease germs. This can be done by keeping the body well clothed and by eating enough wholesome and properly selected food.

Influenza and pneumonia are sputum-borne diseases. By this is meant that the disease is spread by the transfer of secretions from the mouth, nose, and throat of a person who has the disease or still has the germs in his body to a noninfected person. It is a disgusting, but, nevertheless, important fact that sputum is very widely spread by getting on the various articles that we handle every day. Many times each day our hands travel to our mouth or nose and without our thinking of it carry to other objects the secretions from the mouth, nose, or throat. Articles handled by several persons, such as door knobs, mining tools, shovels, and common drinking cups, may be the means of spreading this sputum from one to another.

In observing precautions to protect against sputum-borne disease, these should be kept in mind:

1. Have plenty of fresh air in your living room, sleeping room, and working place.
2. Avoid excesses of any kind, loss of sleep, and excessive fatigue.
3. Keep in good physical condition.
4. Avoid sudden chilling.
5. Provide enough ventilation.
6. Avoid close contact with persons suffering from the disease.

FIRST AID.

Every man employed in or around mines should be familiar with the fundamental principles of first aid to injured persons. Many times has first-aid training proven of value in affording temporary relief and preventing further harm to injured miners.

First aid is not expected to supplant or interfere with the treatment to be given by the physician or surgeon, but has a special usefulness in caring for the injured person until medical aid can be obtained.

"Every man in or around the mines a first-aid man" is an excellent motto.

First Month. **JANUARY.** **31 Days**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Full moon	5	9	5 A.M.	To obtain moon's phases in—
Last Quarter	12	12	9 P.M.	Central time subtract 1 hour.
New Moon	20	5	27 P.M.	Mountain time subtract 2 hours.
First Quarter	28	3	38 P.M.	Pacific time subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Thu.	New Year's Day. Begin the year right. Ventilate.	7.19	4.48
2	Fri.	Wear plenty of clothing to keep warm.	7.19	4.49
3	Sat.	Fresh air helps to prevent influenza and pneumonia.	7.19	4.50
4	Sun.	Never remove a safety flag, sign, or notice.	7.19	4.51
5	Mon.	Roentgen announced discovery of X ray, 1896.	7 19	4.52
6	Tue.	Ex-President Theodore Roosevelt died, 1919.	7.19	4.53
7	Wed.	Assist your fellow workmen to catch the safety habit.	7.19	4.54
8	Thu.	Keep in good condition; this helps to ward off pneumonia.	7.19	4.54
9	Fri.	British forces evacuated Gallipoli, 1916.	7.19	4.55
10	Sat.	Safety first, last, and always.	7.19	4.56
11	Sun.	Avoid intimate contact with persons who have a cold or la grippe.	7.19	4.57
12	Mon.	Fresh air does not necessarily mean cold air.	7.18	4.58
13	Tue.	Now abideth Efficiency, Rapidity, and Safety, but the greatest of these is Safety.	7.18	4.59
14	Wed.	Report all births and deaths in your family to the local registrar.	7.18	5.01
15	Thu.	Constantly refresh your memory on first-aid training.	7.18	5.02
16	Fri.	Sufficient heating is as important as sufficient ventilation.	7.17	5.03
17	Sat.	Cases of communicable disease must be reported to local health officer.	7.17	5.04
18	Sun.	Do not use turpentine on wounds, iodine is best.	7.16	5.05
19	Mon.	"Safety first." Always keep it in mind.	7.16	5.06
20	Tue.	Iodine is the best first-aid antiseptic.	7.16	5.07
21	Wed.	United States Government takes over Dutch ships in American ports, 1918.	7.15	5.08
22	Thu.	Treat colds promptly; they often lead to pneumonia.	7.14	5.09
23	Fri.	Be careful; help prevent accidents.	7.14	5.10
24	Sat.	United Mine Workers of America organized, 1890.	7.13	5.12
25	Sun.	Harwick mine disaster, Cheswick, Pa., 1904; 179 deaths.	7.13	5.13
26	Mon.	Has your mining camp a first-aid team?	7.12	5.14
27	Tue.	Samuel Gompers, President American Federation of Labor, born 1850.	7.11	5.15
28	Wed.	Learn first aid thoroughly.	7.10	5.16
29	Thu.	President William McKinley born, 1843.	7.10	5.17
30	Fri.	Keep physically fit; you are less likely to get pneumonia.	7.09	5.18
31	Sat.	Germany announces unrestricted submarine warfare, 1917.	7.08	5.20

SAFETY FIRST.

Most men always think of accidents as happening to the other fellow. Did you ever figure that YOU have an even chance of being this "other fellow?"

You can reduce this chance by thinking and talking safety.

SELECTED.

SAFETY AND THE ENGLISH LANGUAGE.

The frequent occurrence of accidents that are the result of miners not being familiar with the English language brings out clearly the need for every man who goes underground to understand English.

A foreign-born miner may prefer to speak his native language, because it is much easier for him to talk and to think in that language. However, as most of the settlers in this country before the year 1860 came from countries where the English language is used it was naturally adopted as the common language of this country. Probably 75 per cent of our people use and understand no other language.

A miner speaking a foreign tongue seeks employment from a foreman who can talk to and direct him only in English. He goes underground, where all printed danger signs are written in English. He receives spoken warning of dangers and of dangerous conditions from an underground boss, also in English. If he does not make an earnest effort to learn this language he not only puts his own life in danger, but his mistakes through misunderstanding orders may imperil the lives of his fellow workers. Two or three hundred words of English learned will enable a man to understand and be understood by those who have regard for his safety and their own.

Do not forget that the great majority of the men who come to this country remain here and become citizens. They are just as responsible for and may have just as much part in the running of the local and National Government as the wealthiest citizen of the town in which they work. Therefore to become a good useful citizen each should know the English language.

So for the sake of greater safety everywhere in mines and for better mining-town conditions and government every miner in this country should try to learn the English language.

E. A. Holbrook,
Mining Engineer,
Federal Bureau of Mines.

FIGURE 2.—Keep the "Safety" lamp burning.

Second Month. **FEBRUARY.** **29 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Full Moon	3	8	42	A.M.
Last Quarter	11	8	49	A.M.
New Moon	19	9	35	A.M.
First Quarter	26	11	59	P.M.

To obtain moon's phases in—
Central time, subtract 1 hour.
Mountain time subtract two hours.
Pacific time subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun Rises.	Sun Sets.
1	Sun.	Foreign-born miners should learn to speak English.	7.07	5.21
2	Mon.	"Ground hog" Day.	7.06	5.22
3	Tue.	United States severed relations with Germany. Ambassador dismissed, 1917.	7.05	5.23
4	Wed.	Registration of German aliens in United States began, 1918.	7.04	5.24
5	Thu.	Keep the whole family in good health.	7.03	5.25
6	Fri.	Many accidents can be avoided if all men who work underground understand English.	7.02	5.27
7	Sat.	Many diseases as well as accidents are preventable.	7.01	5.28
8	Sun.	Report all births and deaths to the registrar.	7.00	5.29
9	Mon.	To become a good American, learn English.	6.59	5.30
10	Tue.	By persistent effort any foreign-born miner can learn to speak enough English to be understood.	6.58	5.31
11	Wed.	Every citizen has a part in the government of our Nation. Become a citizen.	6.57	5.32
12	Thu.	Abraham Lincoln born, 1809.	6.56	5.33
13	Fri.	Prevention is better than cure; this is true of accidents and diseases.	6.55	5.35
14	Sat.	St. Valentine's Day.	6.54	5.36
15	Sun.	President Wilson sailed from France, first return, 1919.	6.52	5.37
16	Mon.	Learn English; it will help to prevent accidents.	6.51	5.38
17	Tue.	Personal cleanliness is the first step toward keeping well.	6.50	5.39
18	Wed.	Be sure you understand the boss's directions.	6.49	5.40
19	Thu.	Help foreign-born miners to learn to speak English.	6.47	5.41
20	Fri.	Virginia City (Ala.) mine disaster, 1905; 108 killed.	6.46	5.42
21	Sat.	Germans begin attack on Verdun, 1916.	6.45	5.43
22	Sun.	George Washington born, 1732.	6.43	5.45
23	Mon.	President Wilson reaches United States after first trip to Europe, 1919.	6.42	5.46
24	Tue.	France proclaimed a Republic, 1848.	6.41	5.47
25	Wed.	Cleanliness is always desirable.	6.39	5.48
26	Thu.	Learn the English language.	6.38	5.49
27	Fri.	Report communicable diseases to the health officer.	6.36	5.50
28	Sat.	Keep in good health.	6.36	5.51
29	Sun.	An additional day; use it to advantage.	6.35	5.52

KEEP WELL.

Soapsuds and a scrubbing brush, which cost little, and sunshine and fresh air, which cost nothing, often make large expenditures for doctors and medicines wholly unnecessary. A tan skin and freckles, with the flush of health, produce a type of beauty that all the cosmetics in the world can not imitate. No rouge or powder can produce a complexion that nature makes by the skillful admixture of sunshine, fresh air, cleanlineess, and wholesome living.

ILLINOIS HEALTH NEWS.

142902°—19——2

NATURE OF MINERS' CONSUMPTION.

Continuous breathing of the very fine, sharp particles of flint that constitute the dust in many metal mines produces a mechanical injury to the lungs, causing a disease peculiar to the mining industry, and known as miners' consumption, miners' phthisis, miners' asthma, silicosis, or, more accurately pneumoconiosis due to siliceous rock dust.

Being mechanically produced, miners' consumption is neither contagious nor infectious. The lung, irritated, inflamed, and injured by the hard-rock dust, becomes fibroid—that is, there is developed throughout it a scar-like tissue, which interferes with the normal elasticity of the lung and prevents proper breathing. The disease may attack one or both lungs, but is usually evenly distributed on both sides. Miners' consumption has long been recognized in the mines of the Witwatersrand in South Africa, in the Bendigo district of Australia, in Cornwall, and elsewhere. As this form of consumption becomes established, there is gradual impairment of working ability, owing to shortness of breath, with coughing, loss of weight, and weakness. There is also a disposition to "catch cold" easily, and the cold is apt to settle on the chest. The intensity of miners' consumption varies, all grades of severity being seen, depending on the nature of the dust and the length of time spent underground, or rather the extent of exposure. It may persist for years, and tends gradually to produce total disability.

There is, however, a deeper menace than gradual disability. As the vitality of the whole body is lowered, the injured lung presents an ideal site for the development of tuberculosis. When this happens, not only is the miner threatened with an early death or, at least, a more hopeless future; but, having now a contagious disease, he becomes a source of danger to others—his fellow workmen and his family. A tuberculous infection may take place at any stage of miners' consumption, and it is the opinion of the writer that practically no cases die without its being present. All cases examined that were obviously in a hopeless or dying condition showed tubercle bacilli in the sputum. In other cases, either where the men were still working, or where they were disabled, tubercle bacilli were present in some and not in others.

A. J. Lanza,
Passed Assistant Surgeon,
United States Public Health Service.

Third Month. **MARCH.** 31 Days.

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Full Moon	4	9	13 A. M.	To obtain moon's phases in—
Last Quarter	12	5	57 A. M.	Central time subtract 1 hour.
New Moon	19	10	53 P. M.	Mountain time substract 2 hours.
First Quarter	26	6	45 P. M.	Pacific time subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Mon.	What are you doing to aid in preventing rock dust?	6. 34	5. 52
2	Tue.	Layland (W. Va.) mine explosion, 1915; 112 killed.	6. 32	5. 53
3	Wed.	Brest-Litovsk treaty signed, 1918.	6. 32	5. 54
4	Thu.	President Wilson inaugurated second term, 1917.	6. 29	5. 55
5	Fri.	Do not fill your lungs with rock dust.	6 28	5. 56
6	Sat.	Inform the local health officer of communicable disease	6. 27	5. 57
7	Sun.	Use the water drill in overhead drilling.	6. 25	5. 58
8	Mon.	Keep the rock dust down.	6. 23	5. 59
9	Tue.	Americans wipe out a mile of German trenches, 1918.	6 22	6. 00
10	Wed.	Secretary of War Baker visits American front, 1918.	6. 20	6. 01
11	Thu.	Protect yourself from rock dust.	6. 19	6 02
12	Fri.	Russian Revolution began, Czar deposed, 1917.	6. 17	6. 03
13	Sat.	The wet drill for overhead drilling is troublesome, but worth the trouble.	6. 16	6. 04
14	Sun.	Miners' consumption was known to the ancients.	6. 14	6. 05
15	Mon.	Take proper care of the feet.	6. 13	6. 06
16	Tue.	Breathing rock dust produces miners' consumption.	6. 11	6. 07
17	Wed.	St. Patrick's Day.	6. 09	6. 08
18	Thu.	Tuberculosis often accompanies miners' consumption.	6. 08	6. 09
19	Fri.	First telephone message across the Atlantic, 1919.	6. 06	6. 10
20	Sat.	Wear shoes that fit; tight shoes cause corns.	6. 05	6. 11
21	Sun.	Somme defensive began, 1918.	6. 03	6. 12
22	Mon.	Coal miners very rarely have miners' consumption.	6. 02	6. 13
23	Tue.	Each miner can do much to reduce the dust hazard.	6. 00	6. 14
24	Wed.	Take good care of your lungs; they are useful.	5. 58	6. 15
25	Thu.	Report births and deaths to the local registrar.	5. 57	6. 16
26	Fri.	Ancient records speak of "the metal digger who breathes with difficulty and is of a pale, wan complexion."	5. 55	6. 17
27	Sat.	Using the wet drill prevents rock dust.	5. 54	6. 18
28	Sun.	Avoid working in dry rock dust as much as possible.	5. 52	6. 19
29	Mon.	Foch chosen commander in chief of the Allied forces, 1918.	5. 51	6. 20
30	Tue.	Respirators are of little use in fine siliceous dust.	5. 49	6. 21
31	Wed.	If you work in rock dust, have your lungs examined regularly.	5. 47	6. 22

AVOID THE ROCK DUST.

What can the miner do to avoid breathing dust? Water drills are being used more and more. In dry drilling with machines it is possible to lay the dust by water lines or by using a squirt gun and water from a bucket, but often men drill with the hole dry rather than turn on the water, because it spatters on them, or makes the place sloppy. If you are drilling overhead, and the water has to come back on you, wear a rubber hat and boots, and if necessary a rubber coat. This is a bother, but it is also a bother to observe all the rules of "safety first"—which save lives. Do not breathe hard-rock dust day after day, because if you do it will disable you in time. Men who can "eat rock dust"—like the men who can "breathe gas"—die young.

A. J. LANZA,

Passed Assistant Surgeon, United States Public Health Service.

GOING INTO THE MINE WITH A SAFETY LAMP.

Each miner, upon receiving his lamp, should examine it carefully to detect any possible oversight in assembling it. At the entrance to the mine an experienced safety-lamp man, usually a fire boss or foreman, should examine each lamp taken into the mine, and should not permit any lamp to be taken in that shows defects or is improperly assembled.

When lamps that do not have internal igniters go out within the mine, they should be taken to the relighting station to be relit. Lamps that have internal igniters requiring special electrical appliances should also be taken to a relighting station. Before an attempt is made to relight a lamp equipped with an internal igniter that may be worked by the miner, the lamp should be taken to fresh air or to a place where other lamps are burning, especially if the lamp was extinguished by being filled with gas. If the lamp was put out by a sudden jar or by overturning, it may be safely relighted on the spot, provided another lighted lamp is at hand, so that the extinguished lamp can be examined to determine that it is not damaged. The other lamp should be used to test for the presence of gas before the "dead" lamp is relighted.

James W. Paul,
Mining Engineer, Federal Bureau of Mines.

MINERS' NYSTAGMUS.

Miners' nystagmus is a disease of the eyes which is sometimes found among miners who have been working underground for a number of years. The disease is more common among the miners of England than in this country. It is thought to be due to the defective light with which miners work and to the strained position in which much pick work is often done. Miners affected with the disease complain of objects dancing before the eye, and headache. Other symptoms are rapid movement to and fro of the eyeball, giddiness, and tremors of the head and face.

The condition may be prevented and improved by the use of good lights for underground work. If the trouble persists, the miner may have to give up working by artificial light and work only by daylight.

HEALTH AND SAFETY.

The "safety-first" movement has made the miner feel that each man is responsible for not only his own safety, but the safety of all around him. The same principle is true in preventing sickness. Each person is responsible for not only his own health, but the health of those around him. When he neglects or breaks one of the common-sense rules of health he endangers not only himself, but his family and the men who work near him.

Fourth Month. **APRIL.** **30 Days.**

MOON'S PHASES.	EASTERN TIME.			
	D.	H.	M.	
Full Moon	2	10	55 P. M.	To obtain moon's phases in—
Last Quarter	11	1	21 A. M.	Central time, subtract 1 hour.
New Moon	18	9	43 A. M.	Mountain time, subtract 2 hours.
First Quarter	25	1	23 A. M.	Pacific time, subtract 3 hours.

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Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Thu.	April Fools' Day.	5. 46	6. 23
2	Fri.	Good Friday.	5. 44	6. 24
3	Sat.	Raise a garden and lower the cost of living.	5. 43	6. 25
4	Sun.	Easter Sunday.	5. 41	6. 26
5	Mon.	At end of first year of war with Germany, the American Army totaled more than 1,500,000 men.	5. 40	6. 27
6	Tue.	United States declared war on Germany, 1917. Third Liberty loan offered, 1918.	5. 38	6. 28
7	Wed.	Miners' safety lamp was first invented by an Englishman, Sir Humphrey Davy.	5. 37	6. 29
8	Thu.	Banner mine disaster, Littleton, Ala., 1911; 128 killed.	5. 35	6. 30
9	Fri.	Lys defensive began; American troops participated, 1918.	5. 34	6. 31
10	Sat.	Coal miners working in gaseous mines should thoroughly understand safety lamp.	5. 32	6. 32
11	Sun.	The local registrar desires reports of all births and deaths.	5. 30	6. 33
12	Mon.	Gas and coal dust explosions are often the result of carelessness.	5. 29	6. 33
13	Tue.	Approved electric safety lamps are used in many gaseous mines.	5. 28	6. 34
14	Wed.	Willard Parker, first American surgeon to advocate operation for appendicitis, born 1867.	5. 26	6. 35
15	Thu.	Miners' nystagmus is a disease of the eyes.	5. 25	6. 36
16	Fri.	Working in the garden is excellent to teach children to be industrious.	5. 23	6. 37
17	Sat.	First American division in battle line at Montdidier, 1918.	5. 22	6. 38
18	Sun.	Never unlock a safety lamp in the mine.	5. 20	6. 39
19	Mon.	Observe every precaution when in a gaseous mine.	5. 19	6. 40
20	Tue.	Communicable diseases are dangerous; report them to the local health officer.	5. 17	6. 41
21	Wed.	Victory Liberty loan offered, 1919.	5. 16	6. 42
22	Thu.	Allies land at Gallipoli, 1915.	5. 15	6. 43
23	Fri.	William Shakespeare born, 1564. British Navy "bottles" Zeebrugge, 1919.	5. 13	6. 44
24	Sat.	First American newspaper printed, 1704.	5. 12	6. 45
25	Sun.	The Bureau of Mines has approved certain types of electrical safety lamps.	5. 11	6. 46
26	Mon.	Confederate Memorial Day.	5. 09	6. 47
27	Tue.	Mine disaster, Hastings, Colo., 1917; 122 lives lost.	5. 08	6. 48
28	Wed.	Eccles (W. Va.), mine explosion, 1914; 181 killed.	5. 07	6. 49
29	Thu	Plant a garden and enjoy your own vegetables.	5. 05	6. 50
30	Fri.	George Washington first inaugurated President, 1789.	5. 04	6. 51

PEACE GARDENS.

Around most mining camps there is usually a great deal of ground that can be used as gardens. Many mining companies encourage the planting of gardens by miners or their families. The war gardens demonstrated that large amounts of foodstuffs can be produced on a comparatively small area of ground.

Every miner should have a peace garden and raise his own vegetables. This will not only furnish a needed variety of vegetables for his dinner pail and food for his family, but will be a considerable factor in reducing living expenses.

Plant a peace garden and increase the food production.

CONTAGIOUS DISEASES AMONG CHILDREN.

The spread of most contagious diseases is caused through ignorance or carelessness. As contagious diseases often can not be distinguished from the noncontagious, it is wise to separate children from every sick person, young or old, until the true nature of the illness is known. If the disease is contagious, the separation must be kept up. This separation consists in placing the patient in a room by himself and giving him separate wash cloths, towels, and dishes. One person only should care for the patient, and the clothing of this person should be protected by a gown or long apron or sheet when in the patient's room. After caring for or handling the patient, the caretaker's hands should be carefully washed with warm water and soap.

Every person should cooperate to the fullest extent with the local department of health in its efforts to limit the spread of communicable diseases. Do yourself what you would desire of another parent whose child might be a source of danger to your own family.

So-called colds, such as running nose, sore throat, bronchitis, and the like are easily communicated to children and may be especially serious for the baby.

Do not sneeze or cough in the baby's face. A mother should protect the baby from catching her own cold by tying a handkerchief or piece of cheesecloth over her nose and mouth when nursing or caring for her baby. She should not kiss the baby.

Tuberculosis very often gets its start in infancy. Every effort, therefore, should be made to protect the baby from infection. Common ways of infecting the baby are by kissing it, coughing or sneezing near it, or by allowing it to sit on the floor where it has a good chance to pick up tuberculosis germs with the dust on its toys or other objects and thus get them into its mouth.

It is a good plan to have a separate room or at least part of a room fenced off as the baby's play room, and to cover the floor with a clean sheet each day. Milk from tuberculous cows may also be the cause of tuberculosis in the baby.

PUBLIC HEALTH REPORTS,
United States Public Health Service.

Fifth Month. **MAY.** **31 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.
Full Moon	2	1	47 P. M.
Last Quarter	10	5	51 P. M.
New Moon	17	6	25 P. M.
First Quarter	21	9	7 A. M.

To obtain moon's phases in—
Central time, subtract 1 hour.
Mountain time, subtract 2 hours.
Pacific time, subtract 3 hours.

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Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Sat.	Peace Conference receives German credentials.	5.03	6.52
2	Sun.	Children require plenty of fresh air.	5.02	6.53
3	Mon.	Was the birth of your baby recorded?	5.01	6.54
4	Tue.	Third Liberty loan oversubscribed, 1918.	4.59	6.55
5	Wed.	Never kiss a child if you have a cold.	4.58	6.56
6	Thu.	Do not neglect "cross eyes" in a child.	4.57	6.57
7	Fri.	Terms of peace treaty presented to Germans, 1919.	4.56	6.58
8	Sat.	When baby is fed with a bottle be sure the milk is clean.	4.55	6.58
9	Sun.	Keep your children at home if they have a contagious disease.	4.54	6.59
10	Mon.	Victory Liberty loan oversubscribed, 1919.	4.53	7.00
11	Tue.	Never deceive a child.	4.52	7.01
12	Wed.	Florence Nightingale born, 1820.	4.51	7.02
13	Thu.	See that your child attends school regularly.	4.50	7.03
14	Fri.	First Liberty loan offered, 1917.	4.49	7.04
15	Sat.	Children with cross eyes should be taken to an eye specialist.	4.48	7.05
16	Sun.	First transatlantic flight began by American aviators, 1919.	4.47	7.06
17	Mon.	Edward Jenner, discoverer of vaccination, born 1749.	4.46	7.07
18	Tue.	President Wilson signed selective service act, 1917.	4.45	7.08
19	Wed.	Mining should be regarded as one of the skilled trades.	4.45	7.09
20	Thu.	Promptly report communicable diseases.	4.44	7.09
21	Fri.	Give the baby some water every day.	4.43	7.10
22	Sat.	Milk for the baby should be kept cool.	4.42	7.11
23	Sun.	Children are great imitators; set a good example.	4.42	7.12
24	Mon.	The two most important events in every life, birth and death, should be recorded.	4.41	7.13
25	Tue.	Every child should be vaccinated by the time it is 1 year of age.	4.40	7.14
26	Wed.	If you teach your boy to be a miner, teach him to be a good miner.	4.40	7.14
27	Thu.	Aisne defensive began, 1918, American troops helping.	4.39	7.15
28	Fri.	Humphrey Davy, inventor of safety lamp, died 1829.	4.38	7.16
29	Sat.	Many children are undernourished, even those from wealthy homes. Have your child eat a balanced diet.	4.38	7.17
30	Sun.	Decoration Day. Surg. Gen. Rupert Blue, U. S. P. H. S., born 1867.	4.37	7.17
31	Mon.	American aviators complete first transatlantic flight, 1919.	4.37	7.18

SEVEN DEADLY SINS AGAINST THE BABY.

1. **Dirty head.**
2. **Dirty fingers.**
3. **Pacifiers.**
4. **Wrong food.**
5. **Shoes too small.**
6. **Bulky, wet, and irritating diapers.**
7. **Uncomfortable clothing.**

METHODS OF PREVENTING COAL-DUST EXPLOSIONS.

The methods of preventing coal-dust explosions, according to the means used, may be grouped under six heads, as follows:

1. Lessening the production of coal dust.
2. Preventing coal dust, whether necessarily or unnecessarily made, from being spread through the mine.
3. Preventing coal dust from being ignited.
4. Preventing coal dust from being raised into the air by a concussion or an air blast.
5. Making coal dust, in dry mines, harmless by mixing or covering it with rock dust or fine ashes.
6. Using secondary checks, or safeguards, such as are now known as "rock-dust barriers," as well as preventive measures.

The employment of methods coming under the last three heads is under the control of the mine management, but the personal safety of the miners is concerned, and they should therefore note whether the method adopted is being thoroughly carried out. If it is not, then their duty is to bring the deficiency to the attention of the proper mine officials, in a friendly way; or if the conditions are serious, to call them to the attention of the State mine inspector.

The miner is deeply concerned in the first three methods, inasmuch as he can greatly assist in lessening both the production and the distribution of the coal dust, and he is largely responsible for ignition or nonignition of the dust.

George S. Rice,
Chief Mining Engineer,
Federal Bureau of Mines.

DRINKING WATER UNDERGROUND.

The drinking water used by miners underground is of as much importance as that in use on the surface. The water used for drinking purposes underground should be free from filth or contamination. A public drinking cup should not be used. Many diseases are spread in this manner, among which are common colds, influenza, pneumonia, and syphilis. Each miner should have his own drinking cup, or in mines where drinking water is piped underground a simple sanitary device may be arranged by means of a pipe, with a union on the end too big to be placed in the mouth. It is better so to place the union on the end of the pipe that the water will not come in an upright stream, but pour out on the side.

Sixth Month. **JUNE.** **30 Days.**

MOON'S PHASES. EASTERN TIME.

	D.	H.	M.	
Full Moon	1	5	18 A. M.	To obtain moon's phases in—
Last Quarter	9	6	58 A. M.	Central time, subtract 1 hour.
New Moon	16	1	41 A. M.	Mountain time, subtract 2 hours.
First Quarter	22	6	50 P. M.	Pacific time, subtract 3 hours.
Full Moon	30	8	41 P. M.	

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes more or less from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Tue.	Germans cross Marne, 46 miles from Paris, 1918.	4.37	7.19
2	Wed.	Vaccination prevents smallpox.	4.36	7.20
3	Thu.	William Harvey, discoverer of the circulation of the blood, died 1657.	4.36	7.20
4	Fri.	Help make coal dust harmless.	4.36	7.21
5	Sat.	Registration of all males in United States between 21 and 31, 1917.	4.35	7.22
6	Sun.	American marines take part of Belleau Wood, 1918.	4.35	7.22
7	Mon.	Every person should be vaccinated against smallpox at least every seven years.	4.35	7.23
8	Tue.	Mine fire, Butte, Mont., 1917; 164 lives lost.	4.34	7.23
9	Wed.	Montdidier-Noyon defensive began, 1918, American troops participating.	4.34	7.24
10	Thu.	Watch the top!	4.34	7.24
11	Fri.	Eventually, why not now? You must get the safety habit.	4.34	7.25
12	Sat.	Always do a thing the safe way.	4.34	7.25
13	Sun.	If the drinking water underground is not clean, take in your drinking water with you.	4.34	7.26
14	Mon.	National Flag Day.	4.34	7.26
15	Tue.	First Liberty loan oversubscribed, 1917.	4.34	7.27
16	Wed.	First nonstop transatlantic flight completed, 1919.	4.34	7.27
17	Thu.	Neglected coal dust is often the cause of mine explosions.	4.34	7.27
18	Fri.	The local registrar should be assisted in recording all births and deaths.	4.34	7.28
19	Sat.	Dust, disaster, destruction.	4.34	7.28
20	Sun.	Never use a public drinking cup.	4.34	7.28
21	Mon.	Take no chances; a chalk mark will not hold up the top.	4.34	7.29
22	Tue.	When drinking water is piped underground, some sanitary device should be provided.	4.35	7.29
23	Wed.	The presence of coal dust is an accident hazard.	4.35	7.29
24	Thu.	Speed+carelessness=accident.	4.35	7.29
25	Fri.	Communicable diseases should be reported to the local health officer.	4.35	7.29
26	Sat.	Clean drinking water is important on the surface and underground.	4.36	7.29
27	Sun.	Universal vaccination will banish smallpox.	4.36	7.29
28	Mon.	American troops land in France, 81 days after the declaration of war, 1917. Peace signed by Allies and Germany, 1919.	4.36	7.29
29	Tue.	President Wilson left France for return to America, 1919.	4.37	7.29
30	Wed.	John Barleycorn died, 1919.	4.37	7.29

VACCINATION.

Do not forget that the earlier a child is vaccinated, the sooner it is protected against smallpox. No one can forsee when and where an outbreak of smallpox will take place. It is well, therefore, to be prepared.

The best time to have a baby vaccinated is in its first year. If the baby is healthy it may be vaccinated as early as the third or fourth month.

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MALARIA.

Malaria is a disease which though preventable is still prevalent in many parts of the United States.

Malaria is spread from infected to noninfected persons only by the bite of a certain variety of mosquito.

The prevention of malaria, therefore, depends upon two things:

(1) Prevention of mosquitoes by destroying their breeding places.

(2) Thorough and persistent treatment of all cases of malaria until cured.

THE PREVENTION OF THE BREEDING OF MOSQUITOES.

The anopheles mosquito is the only variety that spreads malaria. The breeding of these mosquitoes may be prevented if—

(1) Standing water in pools and other places is drained off.

(2) The surface of ponds, etc., is kept cleared of vegetation and débris, the banks cleaned and cut down vertically, giving a smooth margin; and

(*a*) An abundance of suitable fish introduced; or

(*b*) A complete film of oil applied; or

(*c*) Swift flow of water set up to carry off or destroy larvæ.

(3) The water is treated with an effective larvicide. It is important to choose the proper method to suit local conditions.

FISH AS DESTROYERS OF MOSQUITOES.

Small fish, usually known as "top minnows," technically known as *Gambusia affinis*, have been found by experiments conducted by the United States Public Health Service to be valuable in destroying mosquito larvæ and wiggletails. This fish is especially suitable for antimosquito work, because—

(*a*) It seeks its food at the surface.

(*b*) It is very prolific.

(c) It gives birth to well-developed young, therefore requiring no special environment for depositing and hatching the eggs.

(*d*) It lives and thrives under a large variety of conditions and frequents areas especially suitable for the support of the mosquito larvæ.

(*e*) It usually lives and multiplies in ponds stocked with predacious fishes providing it has very shallow water for refuge.

Seventh Month. **JULY.** **31 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Last Quarter	8	5	0 P. M.	To obtain moon's phase in—
New Moon	15	8	25 A. M.	Central time, subtract 1 hour.
First Quarter	22	7	20 A. M.	Mountain time, subtract 2 hours.
Full Moon	30	11	19 A. M.	Pacific time, subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Thu.	Bureau of Mines established, 1910	4.38	7.29
2	Fri.	Bad teeth are the source of many ills.	4.38	7.29
3	Sat.	Report all communicable diseases to health officer.	4.39	7.29
4	Sun.	Independence Day.	4.39	7.29
5	Mon.	Malaria can not be spread without mosquitoes.	4.40	7.29
6	Tue.	Dr. Pasteur gave first antirabies treatment, 1885.	4.40	7.23
7	Wed.	First aid to digestion—good teeth.	4.41	7.23
8	Thu.	President Wilson arrived from France, 1919.	4.41	7.28
9	Fri.	Mobilization of National Guard ordered, 1917.	4.42	7.23
10	Sat.	Drain stagnant water.	4.43	7.27
11	Sun.	Keeping the teeth clean prevents their decay.	4.43	7.27
12	Mon.	Eleven American divisions on battle line, 1918.	4.44	7.26
13	Tue.	J. A. Holmes, first Director Bureau of Mines, died, 1915.	4.45	7.26
14	Wed.	French Bastille Day, 1793.	4.45	7.26
15	Thu.	Champagne-Marne defensive began, 1918, American troops participating.	4.46	7.25
16	Fri.	United States Public Health Service established, 1793.	4.47	7.24
17	Sat.	Surrender of Santiago to Americans, 1898.	4.48	7.24
18	Sun.	Aisne-Marne offensive began, 1918, U. S. troops there.	4.48	7.23
19	Mon.	Germans began retreat across Marne, 1918.	4.49	7.23
20	Tue.	Destroy mosquito breeding places and help banish malaria.	4.50	7.22
21	Wed.	Treat malaria until thoroughly cured.	4.51	7.21
22	Thu.	"Top minnows" will destroy mosquito wigglers.	4.51	7.21
23	Fri.	Read Deut. 23:12–14 for sanitary law of Israelites.	4.52	7.20
24	Sat.	If you have toothache, see the dentist at once.	4.53	7.19
25	Sun.	Record all births and deaths with local registrar.	4.55	7.18
26	Mon.	Clean your mouth daily.	4.55	7.17
27	Tue.	Oiling prevents mosquitoes in undrained places.	4.56	7.17
28	Wed.	Many cases of indigestion result from poor teeth.	4.56	7.16
29	Thu.	French and Americans advance on 20-mile front, 1918.	4.57	7.15
30	Fri.	When brushing your teeth, scrub in all directions.	4.58	7.14
31	Sat.	Malaria is spread only by the anopheline mosquito.	4.59	7.13

GOOD TEETH.

The proper care and preservation of the teeth is a most important consideration in the protection of the health. Digestion of food begins in the mouth, and unless the food is properly chewed digestion will be interferred with materially.

Children should early be trained to realize the great necessity for regular and careful brushing of the teeth. Such training is best impressed by a good example of the parents.

Careful inspection of the teeth every six months by a capable dentist is necessary in order to detect any small cavities or needed dental work. Clean teeth seldom decay. The teeth should be brushed daily.

FLIES.

Every miner knows that the common house fly is a filthy, annoying pest. It is also important to realize that flies are dangerous as well as disagreeable, for numerous diseases are spread through the agency of the common filth fly. Tuberculosis, typhoid fever, the diarrheal diseases of children, dysentery, and other diseases are spread by flies carrying germ-laden filth from sick to well persons.

Thus it is readily seen that the prevention and destruction of flies is an important means of preventing the diseases spread by flies. Efforts directed toward killing flies, as trapping or swatting are good, but measures that prevent their hatching and breeding are better. Flies hatch, breed and live in filth, much of their food is obtained from filth, so the cleaning up and removal of filth means the chances for flies to breed are greatly decreased. Stables, cow lots, garbage heaps, and open privy vaults furnish inviting breeding places for flies. All such places should be cleaned at regular intervals, at least every 10 days. Stable manure if scattered will dry and not furnish a place for flies to hatch. Garbage may be disposed of by burning or other suitable means.

Abolish the breeding places of flies, and thus prevent them rather than try and destroy them.

ACCEPTABLE DRINKING WATER FOR MINING CAMPS.

The problem of clean drinking water for mining camps is one which is often overlooked. Clean drinking water for mining camps and towns is just as essential as clean food, clean air, or clean homes.

The source of drinking water is of prime importance, and should be carefully protected from contamination or pollution. If the source is a stream it may be necessary to allow the water to settle and treat it chemically before being ready for use. All lakes or streams used as sources of drinking water should be protected from pollution.

Water obtained from shallow surface wells very often contains filth. Deep wells, those that penetrate an impervious strata of rock, are properly curbed and have a pump, are usually safe. No shallow wells are safe.

Bacteriological examination of any and all sources of drinking water should be made at least every six months. Boiling will render any water safe for drinking.

Eighth Month. **AUGUST.** **31 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Last Quarter	7	0	51 A. M.	To obtain moon's phases in—
New Moon	13	3	44 P. M.	Central time, subtract 1 hour. Mountain time, subtract 2 hours. Pacific time, subtract hours.
First Quarter	20	10	52 P. M.	
Full Moon	29	1	3 A. M.	

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Day of Month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun Rises.	Sun Sets.
1	Sun.	Flies breed in filth.	5. 00	7. 12
2	Mon.	Swat the fly's winter quarters—the stable and can lot.	5. 01	7. 11
3	Tue.	Water may be grossly polluted, yet sparkling.	5. 02	7. 10
4	Wed.	Belgium invaded by Germany, 1914.	5. 03	7. 09
5	Thu.	American troops land at Archangel, Russia, 1918.	5. 04	7. 08
6	Fri.	Report births and deaths to the local registrar.	5. 04	7. 07
7	Sat.	Public health education is more important than public health legislation.	5. 04	7. 05
8	Sun.	Somme offensive began, 1918. Americans there.	5. 05	7. 04
9	Mon.	Francis Scott Key, born, 1780.	5. 07	7. 03
10	Tue.	Clean up all filth and destroy breeding places of flies.	5. 08	7. 02
11	Wed.	Wells in villages or towns are usually not safe.	5. 09	7. 01
12	Thu.	The presence of flies means the presence of filth.	5. 10	6. 59
13	Fri.	"The Star Spangled Banner," written by Francis Scott Key, 1814.	5. 11	6. 58
14	Sat.	Gold discovered in Alaska, 1896.	5. 12	6. 57
15	Sun.	National registration day of males, Great Britain, 1916.	5. 13	6. 56
16	Mon.	Bacteriological examination of all drinking water should be made at regular intervals.	5. 14	6. 54
17	Tue.	Protect wells and springs from surface drainage.	5. 14	6. 53
18	Wed.	Oise-Aisne offensive began, 1918. U. S. troops there.	5. 15	6. 52
19	Thu.	Ypres-Lys offensive began, 1918. Americans there.	5. 16	6. 50
20	Fri.	Anopheline mosquito first noted by Dr. Ross, 1897.	5. 17	6. 49
21	Sat.	Every well should be properly curbed and have a pump.	5. 18	6. 48
22	Sun.	Manure makes a splendid place for breeding flies.	5. 19	6. 46
23	Mon.	Inform local health officer of communicable diseases.	5. 20	6. 45
24	Tue.	The public must be educated to realize the importance of community sanitation.	5. 21	6. 43
25	Wed.	A near-by privy usually means the well is polluted.	5. 22	6. 42
26	Thu.	Clean out the stable regularly.	5. 23	6. 40
27	Fri.	Van. H. Manning made Director Bureau of Mines, 1915.	5. 24	6. 39
28	Sat.	Typhoid, diarrhea and dysentery are spread by polluted drinking water.	5. 24	6. 37
29	Sun.	Get the fly early.	5. 25	6. 36
30	Mon.	Boil drinking water of doubtful purity.	5. 26	6. 34
31	Tue.	1,533,000 American troops in France, 1918.	5. 27	6. 33

EDUCATION VERSUS FORCE.

In the enforcement of health regulations or sanitary laws, two methods present themselves: One that of education and persuasion; the other that of force, or the resort to prosecution under the terms of the law. The choice of which of the two will be most effective, and at the same time accomplish the most permanent results will, as a rule, depend on whether or not special or personal interests are involved. If there are not special financial interests involved and only the welfare of the community or public as a whole is to be taken into consideration, then the educational method is at once the most effective and most permanent in results.

KANSAS STATE BOARD OF HEALTH.

PHYSICAL EXAMINATIONS FOR THE WHOLE FAMILY AT REGULAR INTERVALS.

Every miner and his family should keep in the best possible physical condition. A good miner always takes care to keep his working tools in excellent shape, in order that he may do effective work. He also carefully observes the danger signs that are seen at various places.

In order to keep in good physical condition, every person should undergo a thorough physical examination at least once every year, better still, once every six months. This applies not only to the miner but to every member of his family as well. These periodical physical examinations should be made even if the person is apparently in good health. The physical examinations of young men by the draft boards showed that one of every three men examined was unfit for military service. The same condition of general health probably exists among the young women of the country.

Many diseases begin without sufficient symptoms to attract attention. Tuberculosis, Bright's disease, and some diseases of the heart may progress for some time before the victim is aware of it. Thorough physical examination at regular intervals is the best means of detecting diseased conditions. Such periodic physical examinations show whether grown persons are in satisfactory physical trim, and also show the growth and the physical development of children.

Early knowledge of a disease coming on enables the person affected to take the proper steps in the correction of diet, habits, or occupation to arrest the progress of the disease.

Early treatment of tuberculosis affords a much better opportunity of checking the disease. The same also applies to diseases of the heart and kidneys and to cancer.

Complete periodic physical examinations are important for every person, particularly miners and their families.

TYPHOID FEVER.

Typhoid fever is a germ disease and preventable. The germs of typhoid fever escape through the bowel and kidney discharges of the patient. Carlessness in handling these washes is the principal way in which this sickness is spread. Typhoid germs may be swallowed in water, milk, or food, especially the first two. If the discharges from a typhoid patient are thrown on the ground or into a leaky privy the first rain may wash the germs into a well or spring. Typhoid vaccination is successful. Take it if you have a chance.

Ninth Month. **SEPTEMBER.** **30 Days.**

MOON'S PHASES	EASTERN TIME. D.	H.	M.	
Last Quarter	5	7	5 A. M.	To obtain moon's phases in—
New Moon	12	0	52 A. M.	Central time, subtract 1 hour.
First Quarter	19	4	55 P. M.	Mountain time, subtract 2 hours.
Full Moon	27	1	57 P. M.	Pacific time, subtract 3 hours.

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Day of Month.	Day of Week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun Rises.	Sun Sets.
1	Wed.	If you have a good safety suggestion, tell the foreman.	5.28	6.31
2	Thu.	Better be safe and sure than crippled and poor.	5.29	6.30
3	Fri.	J. A. Holmes appointed first director of the Bureau of Mines, 1910.	5.30	6.28
4	Sat.	Watch the top.	5.31	6.27
5	Sun.	First National Army troops go to camp, 1912.	5.31	6.27
6	Mon.	Labor Day. Battle of Marne began, 1914.	5.33	6.24
7	Tue.	Many diseases begin insidiously; watch for them.	5.33	6.22
8	Wed.	Obey the warnings of the "Danger" signs.	5.34	6.21
9	Thu.	Report births and deaths promptly to the registrar.	5.35	6.19
10	Fri.	Miners must obey safety orders.	5.36	6.17
11	Sat.	Cooperate in accident prevention.	5.37	6.16
12	Sun.	All males 18 to 45 in United States register, 1918.	5.38	6.14
13	Mon.	Gen. John J. Pershing born, 1860.	5.39	6.13
14	Tue.	Americans take 15,000 prisoners, 1918.	5.40	6.11
15	Wed.	Ex-President Taft born, 1857.	5.41	6.09
16	Thu.	United States rejects Austrian peace overtures, 1918.	5.42	6.08
17	Fri.	Periodic physical examinations detect the beginning or presence of diseases.	5.42	6.06
18	Sat.	St. Mihiel offensive terminated, 1918. Americans there.	5.43	6.05
19	Sun.	A careful man is the best safety device.	5.44	6.03
20	Mon.	Have a physical examination once a year.	5.45	6.01
21	Tue.	Eternal vigilance insures safety.	5.46	6.00
22	Wed.	Watch for "Danger" signs.	5.47	5.58
23	Thu.	Report contagious diseases to local health officer.	5.48	5.57
24	Fri.	Get the "safety" habit.	5.49	5.55
25	Sat.	Many diseases can be checked if recognized early.	5.50	5.53
26	Sun.	Meuse-Argonne offensive began, 1918. The Americans were there.	5.51	5.52
27	Mon.	Children should be given physical examinations at regular intervals.	5.51	5.50
28	Tue.	Mining risks can be lessened by obeying safety rules.	5.52	5.49
29	Wed.	Endeavor to reduce accidents.	5.53	5.47
30	Thu.	Bulgaria surrenders to Allies, 1918.	5.54	5.45

SAFETY MEASURES.

In view of the wonderful attainments of the safety movement in the past few years, during which time the hazard of certain industries has been greatly reduced, it is believed that all risks can be lessened. Personal injuries will always accompany industrial activities. Mining will never be free from accidents, for many of its hazards are inherent to the industry, but the progress already made gives assurance that all such hazards can be greatly reduced.

Safety measures are not intended to eliminate the need of personal thought and alertness, as careful men are always better than safety devices, but are essential for the protection of workmen who carelessly or unavoidably expose themselves to existing dangers. Besides, they have a marked tendency to cause men to cultivate habits of care.

H. M. WILSON and J. R. FLEMING,
Federal Bureau of Mines.

SCHOOL INSPECTION.

Many children are seriously handicapped in their school work because of physical defects. Sometimes a child is considered dull or stupid in school when, as a matter of fact, the child has defective hearing or impaired eyesight, or other serious physical condition which requires correction before satisfactory progress can be made with the school work.

Schools in the majority of the larger cities and towns have some form of medical inspection for school children. Every school child, whether in mining camp, country, town, or city, should have the benefit of medical inspection while attending school.

When defects are found, the parent is advised to take the child to a physician or dentist as the case requires.

Medical inspection of schools not only provides careful supervision of the physical condition of the children, but it also assures that the school building and grounds will be carefully looked after.

The buildings and grounds of every school should always be kept in a cleanly condition. Heating, ventilation, and lighting of the schoolroom are important. Adequate provision for lavatories, sanitary drinking facilities, and sanitary toilets or privies are absolutely imperative. No public towel should be permitted in any school. The drinking water used should be safe and clean. A large playground should be provided when possible.

ADENOIDS.

Many children, about 1 in every 10, have adenoids. Adenoids are growths of tissue in the back of the nose and throat; this tissue interferes with the normal breathing of the child.

The first symptom noticeable from adenoids is the labored mouth breathing of the child, especially while sleeping. Children with adenoids are almost invariably under weight, hollow-chested, stoop-shouldered, and anemic. Facial deformity often is a result, the upper teeth protrude and are crowded out of shape.

After proper treatment for adenoids the improvement is usually marked.

Tenth Month. **OCTOBER.** **31 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Last Quarter	4	12	54 P. M.	To obtain moon's phases in—
New Moon	11	12	50 P. M.	Central time, subtract 1 hour.
First Quarter	19	12	29 P. M.	Mountain time, subtract 2 hours.
Full Moon	27	2	9 A. M.	Pacific time, subtract 3 hours.

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Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Fri.	Second Liberty loan offered, 1917.	5. 55	5. 44
2	Sat.	Save on everything—food, clothing, and luxuries.	5. 56	5. 42
3	Sun.	Lend your support toward securing medical inspection for your school.	5. 57	5. 41
4	Mon.	To the local registrar should be made reports of births and deaths.	5. 58	5. 39
5	Tue.	Teach the children thrift.	5. 59	5. 38
6	Wed.	General Pershing made a full general, 1917.	6. 00	5. 36
7	Thu.	Red Cross first incorporated in America, 1881.	6. 01	5. 35
8	Fri.	Learn the value of thrift.	6. 02	5. 33
9	Sat.	Defective teeth often impede the progress of children in school.	6. 03	5. 31
10	Sun.	Thrift is always commendable.	6. 04	5. 30
11	Mon.	If you suspect your child of having adenoids have him examined.	6. 05	5. 28
12	Tue.	Columbus discovered America, 1492.	6. 06	5. 27
13	Wed.	Edith Cavéll, British nurse, executed by Germans, 1915.	6. 07	5. 25
14	Thu.	Saving is as important as earning.	6. 08	5. 24
15	Fri.	See that your child attends school regularly.	6. 09	5. 23
16	Sat.	Every school child should be kept in good health.	6. 10	5. 21
17	Sun.	Help make thrift a national trait.	6. 11	5. 20
18	Mon.	Do not delay treatment for adenoids in children.	6. 12	5. 18
19	Tue.	United States rejects Austrian peace plea. Fourth Liberty loan oversubscribed, 1918.	6. 13	5. 17
20	Wed.	Keep your child at home if it has a contagious disease.	6. 14	5. 16
21	Thu.	Do not stop saving food.	6. 15	5. 14
22	Fri.	Dawson (N. M.) mine explosion, 1913; 263 killed.	6. 16	5. 13
23	Sat.	Every school should have sanitary privies if sewer connections are not available.	6. 17	5. 11
24	Sun.	Patriotism and thrift should be taught every child.	6. 18	5. 10
25	Mon.	Inform the local health officer of the presence of communicable diseases.	6. 19	5. 09
26	Tue.	The schoolroom should be properly ventilated.	6. 20	5. 08
27	Wed.	Act creating Reserve Corps of Public Health Service approved by President Wilson, 1918.	6. 21	5. 06
28	Thu.	Adenoids are curable.	6. 22	5. 05
29	Fri.	Teach children to be courteous and respectful.	6. 23	5. 04
30	Sat.	Turkey surrendered to Allies, 1918.	6. 24	5. 03
31	Sun.	Provide a large playground for the school.	6. 25	5. 01

THRIFT.

The earning of money is not the main economic task of the miner. Spending money wisely is the greatest test of the ability of the miner and his family in the management of business affairs. The war helped to impress upon us the importance of thrift. The habit of thrift should be continued in peace as well as in war. "Save carefully and spend wisely" should be the motto of every miner.

PATENT MEDICINES

In these days of the high cost of living, all unnecessary expenses should be cut down. While doing this do not lose sight of the fact that patent medicines are not only unnecessary but useless. The buying of any patent medicine is a waste of money. Most patent medicines owe their popularity to the fact that they contain a high percentage of alcohol. When in need of medical care go to a capable physician, and do not waste time nor money on patent medicines.

FIGURE 3.—It is folly to expose yourself needlessly to disease.

Eleventh Month. **NOVEMBER.** **30 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.	
Last Quarter	2	7	35 P.M.	To obtain moon's phases in—
New Moon	10	4	5 A.M.	Central time, subtract 1 hour.
First Quarter	18	8	13 A.M.	Mountain time, subtract 2 hours.
Full Moon	25	1	43 P.M.	Pacific time, subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun rises.	Sun sets.
1	Mon.	Final Argonne advance began, 1918.	6. 27	5. 00
2	Tue.	The safe way is the right way.	6. 28	4. 59
3	Wed.	Austria signs armistice with Allies, 1918.	6. 29	4. 58
4	Thu.	Mine rescue apparatus first used in mine, Portskewett, England, 1890.	6. 30	4. 57
5	Fri.	Safety measures are efficiency measures.	6. 31	4. 56
6	Sat.	Be careful all the time.	6. 32	4. 55
7	Sun.	Record all births and deaths with the local registrar.	6. 33	4. 54
8	Mon.	Many accidents are due to negligence.	6. 34	4. 53
9	Tue.	The house in which you live should have plenty of windows.	6. 35	4. 52
10	Wed.	The ex-Kaiser flees to Holland, 1918.	6. 37	4. 51
11	Thu.	Armistice signed with Germany by Allies, 1918.	6. 38	4. 50
12	Fri.	Emperor Charles of Austria abdicated, 1918.	6. 39	4. 49
13	Sat.	St. Paul No. 2, Cherry, Ill., mine fire, 1909; 259 lost.	6. 40	4. 48
14	Sun.	Report all violations of safety rules.	6. 41	4. 48
15	Mon.	Every miner has a part in the prevention of accidents.	6. 42	4. 47
16	Tue.	Keep your house well ventilated.	6. 43	4. 46
17	Wed.	In case of doubt, adopt the safe course.	6. 44	4. 45
18	Thu.	Contagious diseases must be reported to the local health officer.	6. 45	4. 45
19	Fri.	A good miner should endeavor to be a good citizen.	6. 46	4. 44
20	Sat.	Examine the top frequently.	6. 48	4. 43
21	Sun.	German fleet surrendered to Allies, 1918.	6. 49	4. 43
22	Mon.	W. G. McAdoo, Secretary of Treasury, resigned, 1918.	6. 50	4. 42
23	Tue.	American Army crosses into Germany, 1918.	6. 51	4. 42
24	Wed.	Nature's laws are no respecters of persons.	6. 52	4. 41
25	Thu.	Thanksgiving Day.	6. 53	4. 41
26	Fri.	Own your own home.	6. 54	4. 40
27	Sat.	Rules are made to be followed, not disobeyed.	6. 55	4. 40
28	Sun	All German troops had left Belgium, 1918.	6. 56	4. 39
29	Mon.	Nothing is a substitute for alertness and watchfulness.	6. 57	4. 39
30	Tue.	A miner who owns his home is usually a better miner.	6. 58	4. 39

ACCIDENT PREVENTION.

The safeguarding of machines has to do with the safety of the individual employees. Mining requires safeguards that have to do with the safety of the entire working force, such as guarding against mine fires and explosions. Given a sufficient number of conditions favorable to an explosion or fire, there may arise at any moment a combination of circumstances that can furnish the additional factor necessary to initiate a frightful disaster. Safety measures against such conditions are highly desirable. These include for coal mines adequate ventilation, improved safety lamps, explosion-proof motors, permissible explosives, safe methods of handling explosives, restricted use of electricity in gaseous mines, immunizing or eliminating coal dust, use of incombustible material in construction work, adequate fire protection, and mine rescue and first-aid organization.

H. M. WILSON and J. R. FLEMING,
Federal Bureau of Mines.

PREVALENCE OF MINERS' CONSUMPTION.

Men employed underground are not the only ones to be affected with miners' consumption, the disease has been found among mill men and others who shovel in rock dust or work where rock dust is prevalent. Investigations show that the disease is caused by dust rather than impure air, although the latter may in some cases be a factor in intensifying the trouble. Statistics in various countries show that coal miners and iron-ore miners are not subject to pulmonary troubles more than the average of men in the general occupations. In fact, mortality among coal miners from pulmonary tuberculosis and pneumonia is less, so that it is thought that there is some protective influence exercised by coal dust. The fresh coal dust is sterile, and the particles do not irritate the lungs, in spite of the fact that the lung tissue of workers may be blackened. Pennsylvania anthracite dust, however, although not causing miners' consumption, does appear to produce asthma, possibly owing to the hardness and the sharp edges of the particles.

GEO. S. RICE,
Chief Mining Engineer,
Federal Bureau of Mines.

FIGHT VENEREAL DISEASES.

The menace of venereal diseases as a public-health problem has long been recognized, but it took the war with the mobilization of the Nation's man power and the pressing demand for increased production in all the industries, to bring us to a full realization of the fact that venereal diseases are widely prevalent and their annual cost in time, money, and physical incapacity is enormous.

Miners should join in and cooperate with the campaign to banish venereal diseases. Every man should live as clean a life as he demands of the women of his family.

Persons suffering from venereal diseases should persist in treatment until thoroughly cured. This is important, otherwise the diseases may be spread to other persons.

Pamphlets telling of the fight against venereal diseases and giving such facts about sex as are essential for the welfare of the public may be obtained by addressing requests to the following address:

A. For young men.
B. For officials and the general public.
C. For boys.
D. For parents.
E. For girls and young women.
F. For education.

U. S. PUBLIC HEALTH SERVICE,
228 First Street, NW.,
Washington, D. C.

Twelfth Month. **DECEMBER.** **31 Days.**

MOON'S PHASES.	EASTERN TIME. D.	H.	M.
Last Quarter	2	4	29 A. M.
New Moon	9	10	4 P. M.
First Quarter	18	2	40 A. M.
Full Moon	25	0	38 A. M.
Last Quarter	31	4	35 P. M.

To obtain moon's phases in—
Central time, subtract 1 hour.
Mountain time, subtract 2 hours.
Pacific time, subtract 3 hours.

This table is calculated for Washington, D. C., Virginia, Kentucky, Missouri, Kansas, Colorado, Utah, Nevada, and central California. Exact time for rising and setting of sun may vary 2 to 30 minutes, more or less, from this table in other sections of the United States, depending on the parallel of latitude upon which a given place is situated.

Day of month.	Day of week.	SAFETY HINTS AND HISTORICAL EVENTS.	Sun Rises.	Sun Sets.
1	Wed.	Careless handling of explosives costs many lives.	6.59	4.39
2	Thu.	Use great care when taking explosives into the mine.	7.00	4.38
3	Fri.	A careful miner is usually a good miner.	7.01	4.38
4	Sat.	President Wilson sailed from New York for Brest, 1918.	7.02	4.38
5	Sun.	Join the war on venereal diseases.	7.03	4.38
6	Mon.	Yellow fever was banished by fighting in the open.	7.04	4.38
7	Tue.	United States declared war on Austria, 1917.	7.05	4.38
8	Wed.	Safety is the first consideration when using explosives.	7.06	4.38
9	Thu.	Asphenamine is the same drug as Salvarsan.	7.07	4.38
10	Fri.	Never handle explosives carelessly.	7.07	4.38
11	Sat.	First wireless across Atlantic, 1901.	7.08	4.38
12	Sun.	Samuel Gompers first elected president A. F. L., 1886.	7.09	4.38
13	Mon.	President Wilson arrived at Brest, 1918.	7.10	4.38
14	Tue.	Keep open lights away from explosives.	7.10	4.39
15	Wed.	Van. H. Manning, Director Bureau of Mines, born 1861.	7.11	4.39
16	Thu.	Watch your step when using explosives.	7.12	4.39
17	Fri.	Sir Humphrey Davy born, 1779.	7.13	4.39
18	Sat.	Using open lights about explosives has caused many accidents.	7.13	4.40
19	Sun.	Darr mine (Jacobs Creek, Pa.), disaster, 1907; 239 lost.	7.14	4.40
20	Mon.	Write the U. S. P. H. S. for pamphlets dealing with the control of venereal disease.	7.14	4.41
21	Tue.	Always exercise great care in handling explosives.	7.15	4.41
22	Wed.	The surface powder house should be safely locked.	7.15	4.42
23	Thu.	There must be no truce with venereal diseases.	7.16	4.42
24	Fri.	A competent man should be in charge of the powder house.	7.16	4.43
25	Sat.	Christmas Day.	7.17	4.43
26	Sun.	Carry dynamite only in special canvas bags.	7.17	4.44
27	Mon.	Accurate record should be kept of all explosives used.	7.18	4.44
28	Tue.	President Wilson born, 1856.	7.18	4.45
29	Wed.	Use electric safety lamps when handling explosives.	7.18	4.46
30	Thu.	Venereal diseases cause loss of time and health.	7.18	4.47
31	Fri.	Do not carry dynamite in a box which has protruding nails or bolts.	7.19	4.47

CARE IN HANDLING DETONATORS.

The importance of carrying and storing detonators separately from explosives is often overlooked. In numerous instances Bureau of Mines engineers have observed the practice of detonators being carried in the same sack with dynamite or stored in the same box with dynamite or permissible explosives. There should be a special container for detonators. If the detonators are carried in the original container they should be so placed in a pocket in the clothing that they can not strike against timber or a car, or better still, they should be carried in a padded sack or special bag.

GEO. S. RICE,
Chief Mining Engineer, Federal Bureau of Mines.

SANITARY HOUSING.

The dwelling house has a definite effect upon the health of the miner and his family. Living in a house which is not well lighted, and is badly ventilated or without sanitary fixtures, is damp or in disrepair, or unclean, lowers the vitality, injures the health, and causes sickness. The effect of such conditions largely depends upon how long the occupant is exposed to them. The housewife and younger children, who often live indoors 20 to 24 hours a day, are almost always the first to suffer. It is important that dwellings be built and kept in a sanitary condition.

Dwellings should never be built on damp marshy land, nor on made soil unless it is of clean earth. In laying out a new section of a mining town the streets should be laid out in accordance with the best practice as to grading, width, water supply, and drainage pipes, and in such a way as to permit of ample light and ventilation in and about buildings. Lots should be at least 50 feet wide and 150 feet deep. Such a sized lot permits proper placing of the house for light and ventilation for all rooms, with yard space on all sides and room for a small garden. Too large a yard encourages the accumulation of rubbish; too small a yard forces the children to play on the streets.

Single houses are preferable, tenements or barracks should be avoided. In buildings housing several families privacy can not be maintained and disease spreads more rapidly. For average-size families, houses with four, five, or six rooms and bath are most suitable.

The house should have plenty of window space, never less than 1 square foot to 10 square feet of floor area, and 1 to 8 is still better. Sunshine is the best germ destroyer known. It will do little good to provide windows, however, if the housewife keeps the curtains down, or the blinds closed. Let the sunlight in.

Opening both the upper and lower sashes makes better ventilation. When each is partly opened, the fresh air will come in at the bottom and the stale air go out at the top. If windows are so built that with doors between rooms open a current of air can be started the ventilation is improved. Windows do not provide fresh air, if they are kept closed. Bedroom windows should be open at night.

Too many persons occupying one room is unhealthful. Close sleeping quarters help to spread disease through contacts of persons and clothing or through spitting, sneezing, or coughing. There should be 600 cubic feet of air space (roughly 8 by 8 by 10 feet) for every sleeper in a bed room. Even this may not be enough unless the windows are kept open at night. Crowding the home by taking in boarders should be discouraged.

Every dwelling should have water pipes, kitchen sink, toilet, bath tub or showers, if running water is available. Where sewers are not accessible, there should be double cesspools in the yard, carefully placed to avoid polluting the water supply if it is drawn from a well. All waste water from the house should drain to such cesspool or sewer. Plumbing once in, should be kept repaired.

Garbage should be placed in tightly covered cans. Where there is no collection system, the contents of the can should be buried or burned, but never thrown on a rubbish heap. Garbage attracts and breeds flies. Rubbish and ashes should be burned or disposed of and not thrown in an unsightly heap. Don't let puddles form in the yard or alley. They breed mosquitoes.

FIGURE 4.—Don't go about blindfolded; keep on the lookout.

No matter how well planned a house may be, it will be insanitary unless kept clean. Dirt attracts vermin and insects. Keep insects out by keeping the house clean and by screening the windows and doors.

Always remember the house is a home and not merely a place in which to live. If it is improperly built, lacks adequate sanitary facilities, or is in unhealthful surroundings, move out. If it has been properly built and equipped, keep it in a sanitary condition. The condition of a home is a fairly good index of the character of its occupants.

BERNARD J. NEWMAN,
Sanitarian (Reserve),
United States Public Health Service.

DUST AND VENTILATION IN MINES.

Prevalence of dust and lack of ventilation constitute two of the greatest causes of sickness and death in mining to-day. Coal dust is responsible for the extent and violence of many explosions in bituminous coal mines. In metal mines, especially those having ores or walls composed largely of siliceous material, such as quartz, quartzite, and granite, the breathing of air containing the very fine particles of silica dust injures the lungs and induces miners' consumption. Operations that are likely to produce a dangerous amount of dust are the dry drilling of upper holes, shovelling and handling dry finely-divided ores, and blasting dry material when men are on shift or are about to come on.

Lack of ventilation is not common in coal mining, as bitter experience has convinced everyone of the heavy human and financial cost of failing to supply perceptible moving air currents to all working faces. Moreover, because of the special dangers from gas, the laws of most coal-mining States provide for liberal quantities of air entering the mines, and coal-mine inspectors generally interpret the laws in such manner as to require moving air currents at the working faces and working places. As a result, coal miners of any considerable experience are acquainted with practical methods of conducting air through mines and are aware of the necessity of having air well distributed underground. In metal mining, on the other hand, little attention is usually paid to air distribution. The metal miner frequently works under ventilation conditions that would not be allowed in coal mines.

The occurrence of dust frequently depends on ventilation and this relationship is somewhat contradictory; currents of moving air are likely to absorb moisture from the surrounding walls, floors, etc., thus causing finely divided material to become dry and light. In this state bituminous coal dust becomes highly inflammable and dangerous, and finely divided rock dust is readily thrown into the air to be breathed by underground workers. On the other hand, the moving air currents will to a large extent remove from the mine air the very fine dust particles that constitute the greatest menace to the miners' lungs in metal mines.

In mines that are naturally dusty, or are made dusty through removal of moisture by ventilation currents, adequate precautions should be taken to prevent dust being made, and to facilitate its removal. Such measures include continuous systematic sprinkling of walls, timbers, floor, etc., of main intake air courses, working faces and places, ore chutes, etc., or other methods of humidification. A relatively high humidity is not injurious to the health and comfort of underground workers if the air moves perceptibly and is compara-

tively cool. Dry rock-drilling should be eliminated, and to insure this, the cooperation of the underground worker is an absolute necessity. Use of excessive quantities of explosive in bringing down either rock or coal should be discontinued; no shooting of any kind should be done when men are on shift, and after firing of shots ample time should be allowed for the dust to clear from the working places before workers enter them.

Although efficient ventilation depends almost wholly on the mining companies in the use of proper equipment and methods, the miner must be relied upon chiefly to eliminate the dust menace by conscientious use of dust-allaying systems and devices furnished him by the companies. These include the use of wet drills exclusively, the exercise of care, and attention to watering or spraying devices, obedience to rules on shooting, etc. Hence, in bringing about healthful dust and ventilation conditions in mining, the cooperation of underground employees and of mining companies is absolutely essential.

D. HARRINGTON,
Mining Engineer,
United States Bureau of Mines.

FIGURE 5.—Watch for danger in the mine.

MINE GASES.

The most common gases met with in coal mines are: First, methane or marsh gas, also called fire damp. This is carbureted hydrogen and is expressed by the chemical symbol CH_4. Second, carbon dioxide, commonly called black damp, and expressed by the chemical symbol CO_2. Third, carbon monoxide, sometimes called white damp, and expressed by the chemical symbol CO.

Of these, marsh gas, because of its more general occurrence in mines, is by far the most dangerous to the life and safety of the miner. Marsh gas is a colorless, tasteless, nonpoisonous gas, and is present in nearly all coal mines, although in varying amount. In some coal mines the gas is given off in such small quantities that it can not be detected by ordinary means, as by an oil safety lamp, and the mines working in these formations are said to be free from gas or nongaseous; whereas in other places the coal-bearing formations contain large quantities of the gas, in some instances under considerable pressure.

Pure marsh gas, or methane (CH_4), when ignited in the presence of air burns with intense heat without violence. However, when the gas is mixed or diluted with air until the mixture contains 14.5 per cent methane, the ignition is accompanied with a slight explosion. As the dilution increases, the explosions become more violent until the mixture contains about 9 per cent methane. As the dilution increases beyond this point the violence becomes less until the mixture contains only 5.5 per cent, at which point it ceases to ignite.

Owing to the grave danger of accumulations of this gas forming in a coal mine if ventilation is interrupted, sufficient air should be forced into the mine at all times to keep the gas diluted well below the lower explosion point. In mines where open lights are used there should never be more than 1 per cent methane in the mine atmosphere.

Metal mines are usually free from the dangers of this gas, as it is rarely present in such mines. However, in some mines marsh gas has been encountered which was given off by the rock formations; also it has been found in old workings, usually after unwatering, from the decay of timber.

Carbon dioxide (CO_2) is usually present in all coal mines. It is given off by the coal, by decaying timber, by open lights, and in the exhaled breath of men and animals. As it is one of the products of combustion, it is always present after a fire or explosion. It is also found in the gases given off in blasting.

With less than 3 per cent carbon dioxide in the mine atmosphere, no marked distress is felt; as the percentage increases, however, difficulty is experienced in breathing, which grows until the point of

suffocation is reached at about 10 per cent. Carbon dioxide will neither burn nor support combustion.

Carbon monoxide (CO) is colorless, odorless gas and is the product of incomplete combustion. It is found in mines following fires or explosions, and is also found in the gases given off in powder blasts. It is extremely poisonous and dangerous to human life in quantities as low as two-tenths of 1 per cent. For this reason, the miner should avoid breathing fresh powder smoke. Carbon monoxide is combustible and will explode when mixed with air in mixtures ranging from 13 to 73 per cent of CO.

Owing to their limited blood supply, small animals such as birds or mice show marked distress in atmospheres containing as low as 0.15 of 1 per cent of carbon monoxide, and should always be carried along to give warning whenever it is proposed to enter an atmosphere suspected of containing carbon monoxide. As soon as the small animal shows signs of distress, a retreat should be made to fresh air or oxygen breathing apparatus should be worn.

C. A. Herbert,
Mining Engineer,
Federal Bureau of Mines.

AVERAGE HEIGHT, WEIGHT, AND AGE FOR MEN AND WOMEN.

(For a man add 2 pounds to the average; for a woman, subtract 2 pounds.)

[If you are more than 25 pounds below the average for your height and age, you are thin and probably undernourished.]

		Ages.							
		15–24	25–29	30–34	35–39	40–44	45–49	50–54	55–60
Feet.	*Inches.*								
5	0	120	125	128	131	133	134	134	134
5	1	122	126	129	131	134	136	136	136
5	2	124	128	131	133	136	138	138	138
5	3	127	131	134	136	139	141	141	141
5	4	131	135	138	140	143	144	145	145
5	5	134	138	141	143	146	147	149	149
5	6	138	142	145	147	150	151	153	153
5	7	142	147	150	152	155	156	158	158
5	8	146	151	154	157	160	161	163	163
5	9	150	155	159	162	165	166	167	168
5	10	154	159	164	167	170	171	172	173
5	11	159	164	169	173	175	177	177	178
6	0	165	170	175	179	180	183	182	183
6	1	170	177	181	185	186	189	188	189
6	2	176	184	188	193	194	196	194	194
6	3	181	190	195	200	203	204	201	198

Keep Well Series No. 1,
U. S. Public Health Service.

FIGURE 6.—If a miner, like a cat, had nine lives, he could afford to take chances. (Drawn by G. P. Boardman.)

THE SANITARY PAIL PRIVY.

The sanitary need of mining camps everywhere is **sanitary privies.** The expression "Filthy as a mining camp" has become common because many mining towns have absolutely no system of sewage disposal or scavenger service. Insanitary privies are repulsive to the sense of decency as well as dangerous to health.

"A sanitary privy is a labor-saving device for convenient and comfortable use in the safe and cleanly disposal of human excreta."

A sanitary privy must conform to the following specifications:

1. Be fly-proof.
2. Have water-tight receptacle.
3. Be well ventilated.
4. Be easily accessible for cleaning.

The accompanying plans for the construction of a sanitary box, which can be set up in any privy building, have been devised by officers of the Public Health Service. These sanitary boxes have been used in many mining camps and industrial villages. They can be made at small cost and put into any privy building already in use.

This type of sanitary privy is particularly suited to the milder climate of the Southern and Southwestern States.

CONSTRUCTION OF SANITARY PRIVY BOX.

Construct the sanitary privy box of sound, seasoned lumber, tongued and grooved, free from knot holes and cracks, and dressed on at least one side. Nail the box securely, and make all joints tight.

Inside dimensions for the box with single seat (can 15 by 15 inches), and for box with double seat are as follows:

	Box with single seat.	Box with double seat.
Length inches	22	48
Breadth, inches	18	18
Depth, inches	17	17

The lid of the box forms the seat for the privy. Make this lid of sound lumber, and let it project 1 inch over the front and both ends of the box; nail four strips 1 inch square to the under side of this lid in such manner that they will project on the inside of the box, forming a fly-proof joint.

Put the front edge of the seat hole not less than 4 inches back from the front edge of the lid. Hinge the lid at the back so that it may be raised when the can is removed.

Make a cover to the hole so that it overlaps the hole not less than 3 inches in all directions. Use ordinary strap hinges to hold the cover in place.

Bore a horizontal series of eight holes 1 inch in diameter 1 inch from the floor in the front wall of the box. Cover these holes with

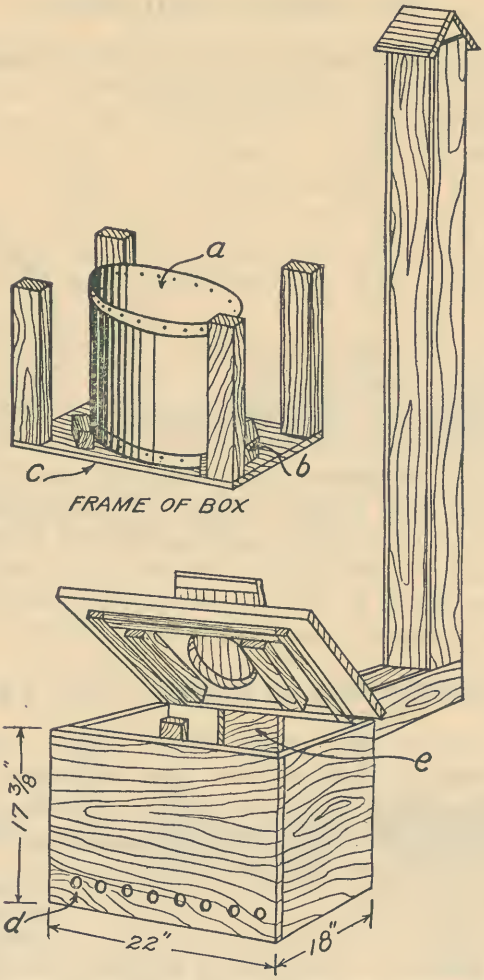

FIGURE 7.—Sketch showing sanitary privy box with stack. (a) Galvanized pail, 15 inches high and 15 inches in diameter; (b) blocks to hold pail in position; (c) bottom of box; (d) 1-inch holes, 1 inch from bottom, to be covered with screen wire; (e) opening to stack, to be covered with screen wire.

good screen wire-gauze of at least 14 meshes to the linear inch. In the back wall make an opening 4½ inches square for the ventilating flue.

Let the ventilating flue measure at least 4 inches square, inside measurement. Make the short arm of the flue about 2 feet long, extend the long arm about 1 foot above the roof of the privy, and join it to the short arm at right angles. Attach the ventilating flue securely to the outside wall of the privy.

Tack small blocks of wood 2 inches thick to the bottom of the box to hold the can in its proper place.

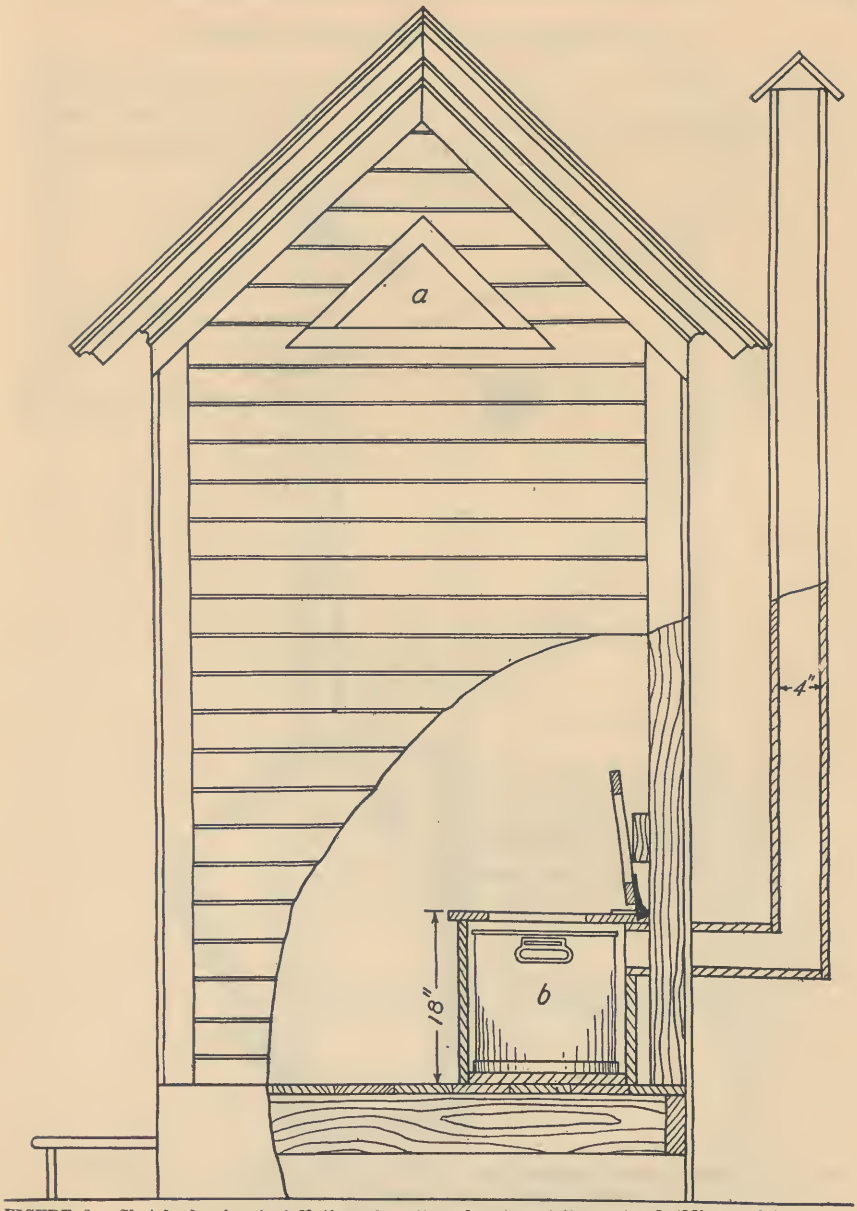

FIGURE 8.—Sketch showing installation of sanitary box in existing privy building. (a) Screen-wire vent; (b) galvanized iron pail, 15 by 15 inches in size.

Fasten a block of wood inside of the back wall of privy to prevent the lid of the seat hole reaching a perfectly vertical position, thus making it self-closing.

The can for use in the sanitary box should be constructed of galvanized iron of No. 22 to No. 26 gage, and should be 15 inches in diameter and 15 inches in height. Handles should be attached to the sides of the can.

A CONCRETE-VAULT SANITARY PRIVY.

Figures 9, 10, and 11 show a type of privy that is recommended by the United States Public Health Service. This privy has a water-tight concrete vault, and is fly-proof, well ventilated, and economical.

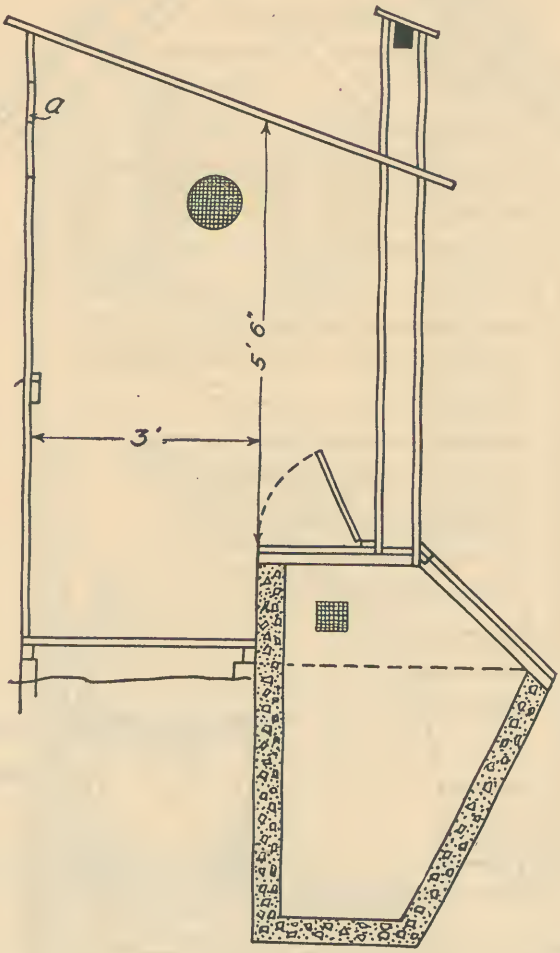

FIGURE 9.—Sketch showing house and vault of sanitary privy. Dimensions are approximate and may be varied. (a) Screened vent over door.

The concrete-vault privy has several desirable features:

1. It is permanent.
2. It requires less scavenger service.
3. It is less likely to need repairs.
4. It is especially useful in colder climates.

The concrete-vault privy is strongly recommended to companies or persons who wish lasting sanitary improvements.

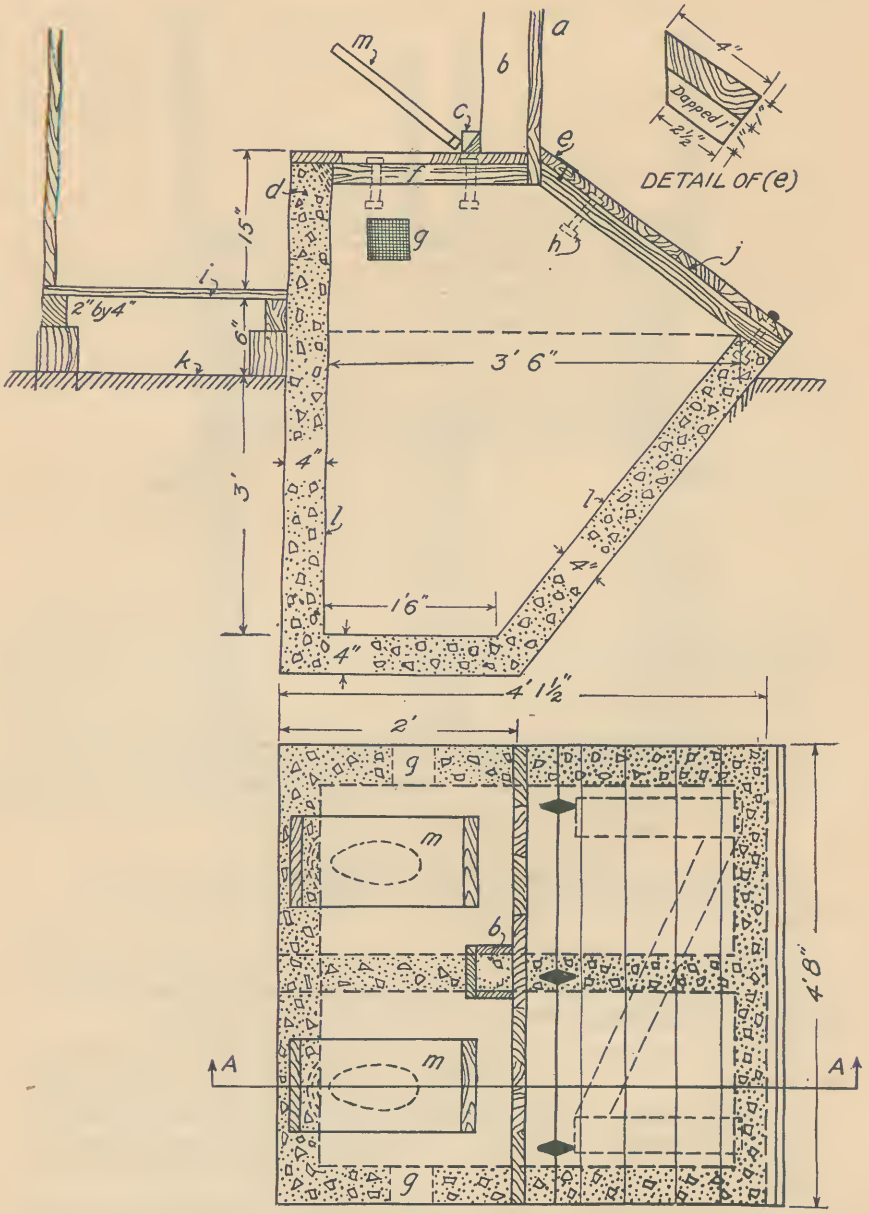

FIGURE 10.—Plan and elevation of concrete vault privy. (a) Back wall of house; (b) vent, 4 inches square, inside house, screened at bottom; (c) No. 24 gauge galvanized-iron hinge; (d) concrete section in front of hole cut to 2 inches; (e) 2 by 4 inch timber extends 1 inch over walls; (f) 2 by 4 inch timber; (g) vent, 4 inches in diameter; (h) ¾-inch anchor bolts, 8 inches long; (i) house floor; (j) door to vault, should be waterproof; (k) ground line; (l) inside surface of vault finished water-tight with neat cement; (m, m) seats 12 by 18 inches. Dimensions are approximate and may be varied.

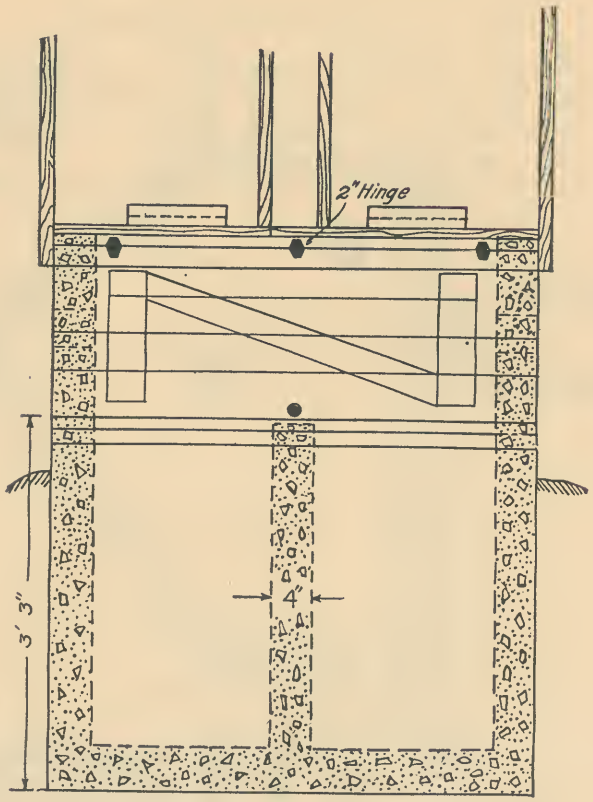

FIGURE 11.—End section of concrete-vault privy.

CONSTRUCTION OF SANITARY CONCRETE-VAULT PRIVY.

1. Study the designs carefully.
2. Dig the hole in the ground 5 inches larger than the outside dimensions of the vault.
3. Make suitable forms corresponding to the inside dimensions of the vault.
4. Pour the bottom of the vault and allow the concrete to "set."
5. Place the forms accurately in the hole, leaving a 5-inch space on all sides.
6. Pour the walls, using barbed wire for reinforcing, and put in the anchor bolts.
7. When sufficiently dry, remove the forms and plaster the inside of the vault with rich concrete to make it positively water-tight.
8. Put on a new privy seat, flue, back lid, and covers over the seat holes, all to fit fly tight.

9. Nail screen wire over the bottom of the flue and over the inside of the three vent holes.

10. Remodel the old privy house and fit it over the vault or built a new privy house.

MATERIALS NEEDED FOR CONSTRUCTION.

For the vault.	Lumber for seat, lids, back door, and flue.
8 sacks of cement.	50 feet, board measure, 1-inch boards.
½ cubic yard of sand.	One 1-inch board, 56 inches long by 12 inches wide.
1 cubic yard of gravel.	Two 2 by 4 inch timbers, 20 inches long.
8 ½-inch anchor bolts, 8 inches long.	Two 2 by 4 inch timbers, 31 inches long.
50 feet of barbed wire.	One 2 by 4 inch timber, 48 inches long.
	One 2 by 4 inch timber, 56 inches long.
	Two 2 by 4 inch timbers, 12 inches long.
	2 hinges for back door.
	4 hinges for seat covers.

METHOD OF USE.

Nail down one seat cover and use only one hole until the compartment is full; then nail down the seat cover over the full compartment, and use only the other side until that is full. Then the first compartment is ready for cleaning.

The advantage of this method is that the excreta has had time to dry, and is less offensive to handle. When using the privy, add a little dry earth from time to time to help absorb the moisture.

FINAL DISPOSAL OF EXCRETA.

Bury the vault contents in a shallow furrow, as far as possible from any source of water supply.

ADVANTAGES OF THIS SANITARY PRIVY.

Flies can not gain access to the excreta.
Filth is not scattered around the premises.
It is easily accessible for cleaning.
It has no disagreeable odors.
It is cheap to install and operate.
It prevents disease and death.

(From pamphlet used by United States Public Health Service in extra-cantonment sanitation. Chattanooga, Tenn.)

HEADQUARTERS OF MINE-RESCUE CARS.

The following are the districts and station headquarters of the mine-rescue cars of the Bureau of Mines. Communications to any one car should be addressed to the headquarters given below for that car. **In case of mine disaster, wire the Bureau of Mines, Pittsburgh, Pa.**

Car 1. District of California and Nevada. Headquarters, Reno, Nev.

Car 2. District of Arizona, New Mexico, and southern Colorado. Headquarters, Raton, N. M.

Car 3. District of Pennsylvania and Ohio. Headquarters, Pittsburgh, Pa.

Car 4. District of Kansas, Oklahoma, Arkansas, Texas, and western Missouri. Headquarters, Pittsburg, Kans.

FIGURE 12.—New all-steel mine rescue car of the Bureau of Mines.

Car 5. District of Montana, Idaho, Washington, Oregon, North Dakota, and South Dakota. Headquarters, Butte, Mont.

Cars 6 and 7. In reserve.

Car 8. District of West Virginia, eastern Kentucky, and western Virginia. Headquarters, Huntington, W. Va.

Car 9. District of Indiana, Illinois, western Kentucky, eastern Missouri and Iowa. Headquarters, Terre Haute, Ind.

Car 10. District of northern Michigan, Wisconsin, and Minnesota. Headquarters, Ironwood, Mich.

Car 11. District of Idaho, Wyoming, and northern Colorado. Headquarters, Rock Springs, Wyo.

BUREAU OF MINES RESCUE STATIONS.

In addition to the 11 mine-rescue cars operated by the Bureau of Mines, there are 9 rescue stations situated in important mining centers in various parts of the country. A mine-rescue station is equipped with first-aid supplies, rescue apparatus, and other safety devices. A motor truck is used to transport the crew of the station

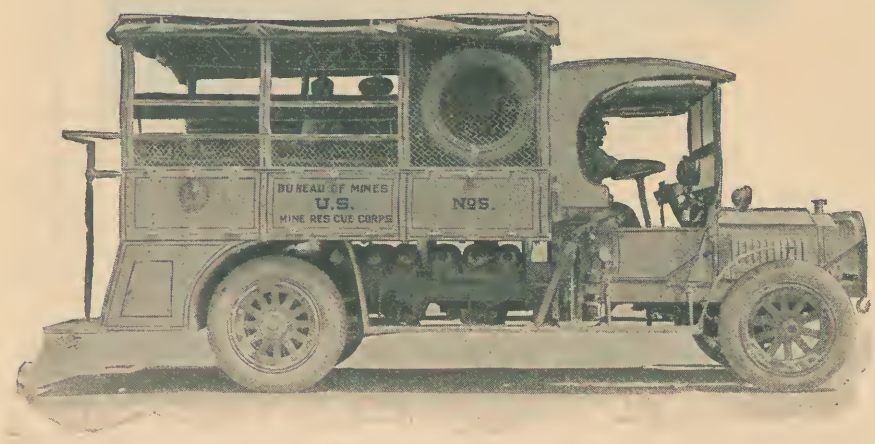

FIGURE 13.—Mine rescue truck of the Bureau of Mines.

and the necessary equipment to various parts of the district for the training of classes in first aid or for rescue work at mine disasters.

The following are the rescue stations of the Bureau of Mines:

Pittsburgh, Pa.
Norton, Va.
Evansville, Ind.
Vincennes, Ind.
Berkeley, Calif.
McAlester, Okla.
Birmingham, Ala.
Jellico, Tenn.
Seattle, Wash.

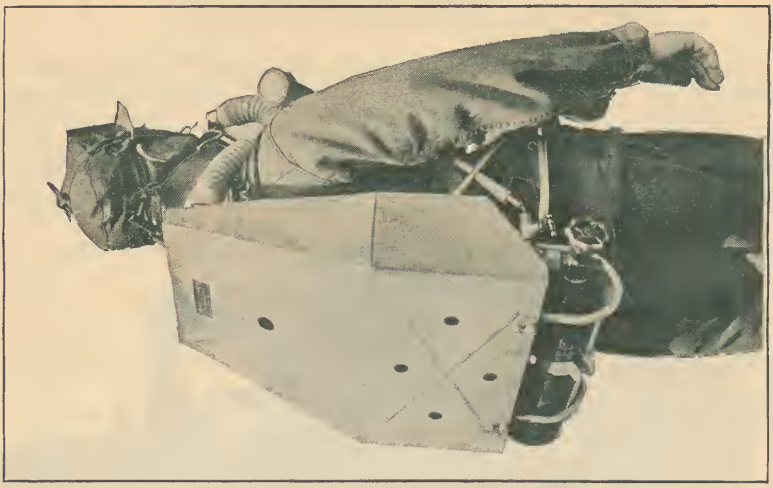

FIGURE 15.—Miner wearing breathing apparatus, back view.

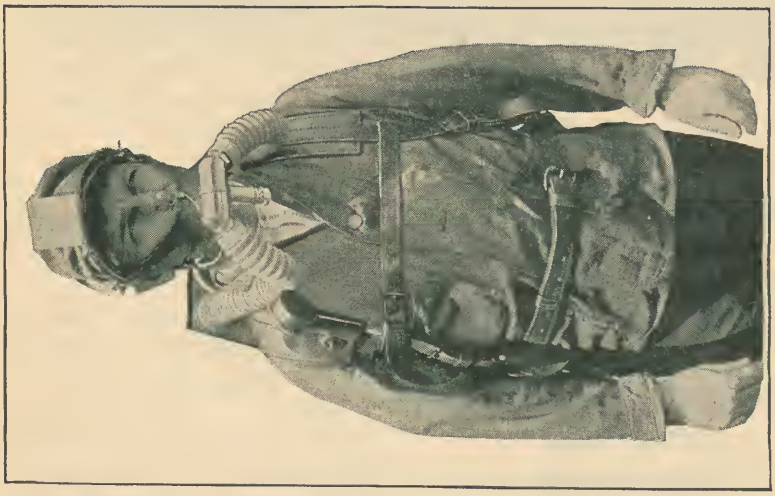

FIGURE 14.—Miner wearing self-contained mine-rescue breathing apparatus, front view.

PUBLICATIONS OF THE BUREAU OF MINES.

A complete list of the publications issued by the Bureau of Mines may be obtained by addressing the Director, Bureau of Mines, Washington, D. C.

The following is a list of publications dealing with sanitation and safety.

BULLETINS.

BULLETIN 87. Houses for Mining Towns, by J. H. White. 1914.

BULLETIN 93. Miners' Nystagmus, by F. L. Hoffman. 1916.

BULLETIN 99. Mine Ventilation Stoppings, with Especial Reference to Coal Mines in Illinois, by R. Y. Williams. 1915.

BULLETIN 131. Approved Electric Lamps for Miners, by H. H. Clark. 1917.

BULLETIN 132. Siliceons Dnst in Relation to Pulmonary Disease in the Joplin District, Missouri, by Edwin Higgins, A. J. Lanza, F. B. Laney, and G. S. Rice. 1917.

BULLETIN 139. Control of Hookworm Infection at the Deep Gold Mines of the Mother Lode, California, by J. G. Cnmming and J. H. White. 1917.

TECHNICAL PAPERS.

TECHNICAL PAPER 11. The Use of Mice and Birds for Detecting Carbon Monoxide after Mine Fires and Explosions, by G. A. Burrell. 1912.

TECHNICAL PAPER 21. The Prevention of Mine Explosions, Report and Recommendations, by Victor Watteyne, Carl Meissner, and Arthur Desborough. 1912.

TECHNICAL PAPER 29. Training with Mine-Rescue Breathing Apparatus, by J. W. Paul. 1912.

TECHNICAL PAPER 33. Sanitation at Mining Villages in the Birmingham District, Alabama, by D. E. Woodbridge. 1913.

TECHNICAL PAPER 39. The Inflammable Gases in Mine Air, by G. A. Burrell and F. M. Seibert. 1913.

TECHNICAL PAPER 56. Notes on the Prevention of Gas and Dust Explosions in Coal Mines, by G. S. Rice. 1913.

TECHNICAL PAPER 75. Permissible Electric Lamps for Miners, by H. H. Clark. 1914.

TECHNICAL PAPER 77. Report of the Committee on Resuscitation from Mine Gases, by W. B. Cannon, G. W. Crile, Joseph Erlanger, Yandell Henderson, and S. J. Meltzer. 1914.

TECHNICAL PAPER 82. Oxygen Mine Rescue Apparatus and Physiological Effects on Users, by Yandell Henderson and J. W. Paul. 1917.

TECHNICAL PAPER 97. Saving Fuel in Heating a House, by L. P. Breckenridge and S. B. Flagg. 1915.

TECHNICAL PAPER 102. Health Conservation at Steel Mills, by J. A. Watkins. 1916.

TECHNICAL PAPER 103. Organizing and Conducting Safety Work in Mines, by H. M. Wilson and J. R. Fleming. 1917.

TECHNICAL PAPER 105. Pulmonary Diseases in the Joplin District, Missouri, and Its Relation to Rock Dust in the Mines, by A. J. Lanza and Edwin Higgins. 1915.

TECHNICAL PAPER 116. Miners' Wash and Change Houses, by J. H. White. 1915.

TECHNICAL PAPER 132. Underground Latrines for Miners, by J. H. White. 1916.

TECHNICAL PAPER 150. Limits of Complete Inflammability of Mixtures of Mine Gases and Industrial Gases with Air, by G. A. Burrell and A. W. Gauger. 1917.

TECHNICAL PAPER 153. Occurrence and Mitigation of Injurious Dusts in Steel Works, by J. A. Watkins. 1917.

TECHNICAL PAPER 156. Carbon Monoxide Poisoning in the Steel Industry, by J. A. Watkins. 1917.

TECHNICAL PAPER 167. Men Who Received Bureau of Mines Certificates of Rescue Training, July 1, 1914, to June 30, 1916, compiled by D. J. Parker. 1917.

TECHNICAL PAPER 190. Methone Accumulations from Interrupted Ventilation, With Special Reference to Coal Mines in Illinois and Indiana, by H. I. Smith and R. J. Hammon. 1918.

MINERS' CIRCULARS.

MINERS' CIRCULAR 4. The Use and Care of Mine-Rescue Breathing Apparatus, by J. W. Paul. 1911.

MINERS' CIRCULAR 5. Electrical Accidents in Mines, Their Causes and Prevention, by H. H. Clark, W. D. Roberts, L. C. Ilsley, and H. F. Randolph. 1911.

MINERS' CIRCULAR 7. Use and Misuse of Explosives in Coal Mining, by J. J. Rutledge, with a preface by J. A. Holmes. 1913.

MINERS' CIRCULAR 9. Accidents from Falls of Roof and Coal, by G. S. Rice. 1912.

MINERS' CIRCULAR 10. Mine Fires and How to Fight Them, by J. W. Paul. 1912.

MINERS' CIRCULAR 11. Accidents from Mine Cars and Locomotives, by L. M. Jones. 1912.

MINERS' CIRCULAR 12. Use and Care of Miners' Safety Lamps, by J. W. Paul. 1913.

MINERS' CIRCULAR 13. Safety in Tunneling, by D. W. Brunton and J. A. Davis. 1913.

MINERS' CIRCULAR 14. Gases Found in Coal Mines, by G. A. Burrell and F. M. Seibert. 1913.

MINERS' CIRCULAR 16. Hints on Coal-Mine Ventilation, by J. J. Rutledge. 1914.

MINERS' CIRCULAR 17. Accidents from Falls of Rock and Ore, by Edwin Higgins. 1914.

MINERS' CIRCULAR 18. Notes on Miners' Carbide Lamps, by J. W. Paul. 1915.

MINERS' CIRCULAR 19. The Prevention of Accidents from Explosives in Metal Mining, by Edwin Higgins. 1914.

MINERS' CIRCULAR 20. How a Miner Can Avoid Some Dangerous Diseases, by A. J. Lanza and J. H. White. 1915.

MINERS' CIRCULAR 21. What a Miner Can Do to Prevent Explosions of Gas and of Coal Dust, by G. S. Rice. 1915.

MINERS' CIRCULAR 22. Dangerous and Safe Practices in Bituminous Coal Mines, by Edward Steidle. 1919.

MINERS' CIRCULAR 23. Elementary First Aid for the Miner, by W. A. Lynott and D. Harrington. 1916.

MINERS' CIRCULAR 24. Miners' Safety and Health Almanac for 1919, by R. C. Williams. 1918.

HANDBOOKS.

Advanced First-Aid Instructions for Miners, a Report on Standardization, by a Committee of Surgeons: G. H. Halberstadt, A. F. Knoefel, W. A. Lynott, W. S. Rountree, and M. J. Shields. 1917.

Rescue and Recovery Operations in Mines After Fires and Explosions, by J. W. Paul and H. M. Wolflin. 1916.

CHARTS.

Resuscitation from Gas Asphyxiation, Drowning, and Electric Shock, compiled by Yandell Henderson. 1919.

Chart of Properties of Mine Gases, by G. A. Burrell. 1918.

PUBLICATIONS OF THE UNITED STATES PUBLIC HEALTH SERVICE.

The following publications of the United States Public Health Service are of interest to miners. They may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C.

PUBLIC HEALTH BULLETINS.

35. The Relation of Climate to the Treatment of Pulmonary Tuberculosis, by F. C. Smith. (Revised Edition, 1916.)

36. Tuberculosis: Its Nature and Prevention, by F. C. Smith. (Revised Edition, 1917.)

37. The Sanitary Privy: Its Purpose and Construction, by Prof. C. W. Stiles. 1910.

68. Safe Disposal of Human Excreta at Unsewered Homes, by L. L. Lumsden, C. W. Stiles, and A. W. Freeman. April, 1915.

69. Typhoid Fever: Its Causation and Prevention, by L. L. Lumsden. May, 1915.

70. Good Water for Farm Homes, by A. W. Freeman. May, 1915.

71. Studies in Vocational Diseases. 1. The Health of Garment Workers, by J. W. Schereschewsky. 2. The Hygienic Conditions of Illumination in Workshops of the Womens' Garment Industry, by J. W. Schereschewsky and D. H. Tuck. August, 1915.

73. Tuberculosis Among Industrial Workers: Report of an Investigation Made in Cincinnati, with Special Reference to Predisposing Causes, by D. E. Robinson and J. G. Wilson. March, 1916.

76. Health Insurance: Its Relation to the Public Health, by B. S. Warren and Edgar Sydenstricker. March, 1916.

78. Influence of Occupation on Health during Adolescence. Report of a Physical Examination of 679 Male Minors Under 18 in the Cotton Industries of Massachusetts, by M. V. Stafford. 1916.

81. Studies in Vocation Diseases. The Effect of Gas-Heated Appliances Upon the Air of Workshops, by Charles Weisman. September, 1916.

85. Miners' Consumption. A Study of 433 cases of the Disease Among Zinc Miners in Southwestern Missouri, by A. J. Lanza, with a chapter on Roentgen-Ray Findings in Miners' Consumption, by Samuel B. Childs. January, 1917.

89. A Sanitary Privy System for Unsewered Towns and Villages, by L. L. Lumsden. 1917.

92. Color Blindness. Its Relation to Other Ocular Conditions, and the Bearing on Public Health of Tests for Color-Sense Acuity, by G. L. Collins. 1918.

94. Rural Sanitation. A Report on Special Studies Made in 15 counties in 1914, 1915, and 1916, by L. L. Lumsden, October, 1918.

REPRINTS FROM PUBLIC HEALTH REPORTS.

72. Vegetables as a Possible Factor in the Dissemination of Typhoid Fever, by R. H. Creel. February 9, 1912.

76. The Necessity for Safe Water Supplies in the Control of Typhoid Fever, by A. J. McLaughlin. March 22, 1912.

100. Whooping Cough: Its Nature and Prevention. A Popular Discussion of a Widespread and Dangerous Disease for which Familiarity has Bred Contempt, by W. C. Rucker. October 25, 1912.

105. Antimalarial Measures for Farmhouses and Plantations, by H. R. Carter. December 6, 1912.

150. The Citizen and the Public Health: The Individual's Relation to the Health of the Community, by J. W. Trask. November 7, 1913.

195. Industrial Conditions: Their Relation to the Public Health, by B. S. Warren. May 29, 1914.

197. Industrial Insurance: Medical Examination of Employees and Prevention of Sickness its Proper Foundation, by J. W. Schereschewsky. June 5, 1914.

204. What is a Safe Drinking Water? by A. J. McLaughlin. June 26, 1914.

213. Safe Ice, by Hugh S. Cumming. 1914.

221. Tuberculosis: The Financial Aspect of the Sick Leaving Home in Search of a Beneficial Climate, by Thompson Frazer. September 18, 1914.

225. The Chemical Disinfection of Water, by E. B. Phelps. October 9, 1914.

234. Physical Examination of Workers, by J. W. Schereschewsky. November 20, 1915.

250. Sickness Insurance: Its Relation to Public Health and the Common Welfare, by B. S. Warren. January 8, 1915.

287. The Practical Use of Disinfectants, by H. E. Hasseltine. July 2, 1915.

387. Climate and Tuberculosis: The Relation of Climate to Recovery, by J. W. Trask. February 23, 1917.

400. Occupation and Mortality: Their Relation as Indicated by the Mortality Returns in the City of New York for 1914, by S. W. Wynne and W. H. Guilfoy. June 8, 1917.

412. Hay Fever: Its Causes and Prevention in the Rocky Mountains and Pacific States, by William Scheppegrell. July 20, 1917.

418. Certain Military Aspects of Hookworm Disease, by C. W. Stiles. August 17, 1917.

424. Tetanus in Court-Plaster: Results of the Bacteriological Examination of 14 Specimens, by G. W. McCoy, J. P. Leake, and H. B. Corbett. September 7, 1917.

429. The Lighting of Industrial Establishments: The Need of Supervision, with a Suggested System of Maintenance Rating for Artifical-light Equipment, by D. H. Tuck. October 19, 1917.

430. Diptheria: An Epidemic, Probably of Milk Origin, at Newport, R. I., and vicinity, by G. W. McCoy, Joseph Bolton, and H. S. Bernstein. October 26, 1917.

435. Vaccination Against Smallpox: The Kind of Vaccine and How to Use It. November 30, 1917.

441. Mitigation of the Heat Hazard in Industries, by J. A. Watkins. December 14, 1917.

448. Industrial Efficiency: The Bearing of Physiological Science Thereon. A review of recent work. By F. S. Lee. January 11, 1918.

454. Prophylaxis of Malaria: Immunization by Quinine, by H. R. Carter. March 29, 1918.

458. Methods for Field Study of Industrial Fatigue, by P. S. Florence. March 15, 1918.

461. Pellagra: Its Nature and Prevention, by Joseph Goldberger. April 5, 1918.

SUPPLEMENTS TO PUBLIC HEALTH REPORTS.

1. Measles, by W. C. Rucker. January 24, 1913.

2. Indoor Tropics. The Injurious Effect of Overheated Dwellings, Schools, etc., by J. M. Eager. January 31, 1913.

3. Tuberculosis; Its Predisposing Causes, by F. C. Smith. February 7, 1913.

4. The Citizen and the Public Health, by A. M. Stimson. February 28, 1913.

5. Fighting Trim: The Importance of Right Living, by J. M. Eager. March 14, 1913.

7. Shower Baths for Country Houses. A Serviceable and Inexpensive Shower Bath Readily Improvised in Town or Country, by Carroll Fox. August 1, 1913.

10. The Care of the Baby. Prepared by a committee of the American Association for the Study and Prevention of Infant Mortality and Presented to the association at its annual meeting held in Washington, D. C., November 14–17, 1913.

11. What the Farmer Can Do to Prevent Malaria, by R. H. von Ezdorf. February 13, 1914.

14. Diphtheria: Its Prevention and Control, by J. W. Schereschewsky. April 17, 1914.

16. The Summer Care of Infants, by W. C. Rucker and C. C. Pierce. June 19, 1914.

24. Exercise and Health, by F. C. Smith. May 7, 1915.

29. Transmission of Disease by Flies, by Ernest A. Sweet. April 14, 1916.

30. Common Colds, by W. C. Rucker. March 16, 1917.

31. Safe Milk: An Important Food Problem, by Ernest A. Sweet. May 25, 1917.

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